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**FISCAL POLICY, GOVERNMENT SIZE AND ECONOMIC PERFORMANCE:
EMPIRICAL EVIDENCE FROM SELECTED ASEAN COUNTRIES**

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ABSTRACT

In an endogenous growth model with public finance including tax, expenditure and components of government expenditure by function, this study characterizes fiscal policy for some ASEAN economies, also the relationship between the growth rate, tax rate and expenditure shares on the GDP. Moreover, it examines the impact of different components of government expenditure by function on economic growth. I use panel data of two samples. There are seven ASEAN countries in first sample and five ASEAN countries in second sample over 28 years. I use linear regression techniques for panel data. According to estimation results, government spending has negative and significant effects on the growth rate. In contrast, tax revenue has positive impact on economic growth. My empirical results are obtained by using Barro model (1990) and Devarajan et al. (1996).

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1. Introduction

1.1 research background

ASEAN (Association of Southeast Asian Nations) was established in 1967 with five member countries, namely Indonesia, Malaysia, the Philippines, Thailand and Singapore. Brunei Darussalam then joined on 7 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999, making up what is today the ten Member States of ASEAN. From 1980 to 2010, ASEAN economic growth increase strongly at average annual rate 5.5-10 percent, but implied risk. A unique characteristic of the ASEAN economies most badly damaged by the Asian financial crisis of 1997-98 was that fiscal policies and public debt levels had been relatively sound leading up to the crisis. Recently, concerns over European sovereign debt and the political battle over budgets in the US continue to cause market volatility. The ASEAN region has managed to find itself in a strong fiscal. It is worth to evaluate how fiscal policies can help to drive ASEAN economic development. Hence, the important tasks for policy maker in ASEAN countries before they carry out new fiscal policies is to evaluate the impact of public expenditure or/and tax rate on growth as well as to identify the government share in economy that maximize the performance of the economy.

Do taxes and government expenditures enhance or impede economic growth? This question lies at the heart of public finance and taxation policy, both at the national and regional levels.

The emergency of endogenous growth model has led to a surge of both theoretical and empirical research aim to discuss broad of issue related to growth experience of countries. Among them, the role of public policies, in particular fiscal policy, has attracted a number of studies analyzing the subject from different perspective. In general, the conclusion of this literature are rather inconclusive on the influence of fiscal policy on growth, which might be related to the fact that different fiscal policy instruments can lead to opposite effects on growth: on the one hand, a greater involvement of the public sector in the economy would tend to promote growth, but, on the other hand, higher taxes and regulation would affect growth negatively.

For above reason, I use endogenous growth model of Barro (1990, 1991) and developed by Devarajan (1996) to analyzing the impact of fiscal policy on economic performance during

1980-2010 in some selected ASEAN countries. I hope that the results enable making policy recommendation public finance areas. Also, I add more evidences for the relationship between fiscal policies and economic growth and the hypothesis of endogenous growth model.

1.2 The research problems, delimitation, and the research target

The research question: How fiscal policy affects on economic performance of ASEAN countries?

To answer for this question, some sub questions will be analyzed follow.

- How public expenditure affects on the growth in some selected ASEAN countries?
- How tax revenue affects on the growth in some selected ASEAN countries?
- How public expenditure by function affects on economic growth in some selected ASEAN countries?

Research aims: The aim of this thesis is to evaluate the impact of fiscal policy on growth, more generally on economic performance in ASEAN countries during 1983-2010.

Firstly, I will review literature that is related to fiscal policy and growth. In section 2, I present a theoretical model in which those fiscal instruments presumed to influence the growth. In section 3, I deal with fiscal policy and the level of budget performance recently for ASEAN countries. Next I will offer an empirical application of the model in section 3, for the case of ASEAN countries during 1983-2010. Finally, the main conclusions and policy recommendations are presented in section 4.

1.3 research approach and methods

The study uses the quantitative method with database is collected from World Bank and Asian Development Bank of ASEAN selected countries during 1983-2010. Thus, I use the panel data for regression with fixed effect model and random effect model.

I use the endogenous model. In model, I would divide independent variable in two groups: Fiscal policy variables and non-fiscal variables. Fiscal policies variables include tax policy variables, government final consumption expenditure, government expenditures by function.

2. Related literature and theoretical focus

2.1 *Public finance*

Public finance is part of economics. It deals with the financial decisions; of public sector entities. Traditionally it includes the following issues:

The economics basis of government activity: What is the economic behind government? Why should they exist? What shouldn't they do?

Government expenditure: How should budgets/funds be allocated between various types of expenditure? How should expenditure be controlled?

Government financing include taxation and debt financing. What kind of taxes are good and fair? What levels of government debt are sustainable?

Empirically, public finance is at least trying to give a comprehensive picture of entire economic activity of public sector. It is described through the government financial statistics (GFS) which are part of national accounts.

Public finance is less focused on decision making. It is assumed to be a similar way like other sector specific fields of economics such as the theory of households or theory of enterprises.

The second issue considered in public finance is government expenditure. Here the main issue is government's share of entire economy. There are various ways to measure this:

- Government expenditure as percentage of gross domestic product (GDP)
- Tax revenues and social security contribution as a percentage of GDP
- Tax revenue as percentage of GDP

The third issue of public finance is government financing including taxation and public debt. During much of last century the focus was clearly on taxation, creating classifications for various forms of taxes such as direct, indirect, on flows, on wealth and developing principles of good or optimal tax. Good taxes are taxes that are fair, cause minimal disruption or side effect to the economy and minimal cost for collection.

Public Finance is to provide information and to provide useful data as done for the developed nations that transferred Public Finance technology to developing countries. B.C.Oplopade (2010) cited the following:

1. Buchman (1970): public finance studies the economic activity of government as a unit
2. Musgrave (1993): the complex of problems that centre around the revenue expenditure process of government is referred to traditionally as public finance
3. Shirras (1969) the study of the principles underlying the spending and raising of funds by public authorities.
4. Hyman (1993): public finance is the field of economic that studies government activities and alternative means of financing expenditure. As you study public finance, you will learn about the economic basis of government activities. A key objective of the analysis is to understand the impact of expenditure, regulation on taxes and on borrowing to work ... and good income.
5. Mayo (1996) public finance studies objectively the phenomenon of state finance without prior preferences and without wishing to provide duties for political action. The history of public finance is the reflection in the field of taxes, fees, revenue from demands and of public debts, while economic is defined as a branch of social science that is concerned with money, trade activities and industrial systems in a society. It uses scientific approach for developing economic theories (Kaewsuwan).
6. The economist need a model to explain economic process (b) to get reality from observed data i.e. an economic issue and (c) assist an economist to measure changes i.e. developing new economic theory. Public finance is to provide information to an economist hence it is one of the discipline to serve as an economist technologist.

The relative scale of public finance

The ratio between public finance and gross domestic product (GDP) is a measure of the proportion of total output in a country accounted for by the government sector. The relative sizes of public and private sectors have recently been major issues of public policy in most countries.

GDP is thought to be the most accurate measure of the relative scale of public finance within the domestic economy. The public finance/GDP ratio most often is the proportion of public expenditure within GDP. However, there are four public finance/GDP ratios:

- Public expenditure/GDP ratio
- Tax/GDP ratio

- Public sector borrowing/GDP ratio
- Public sector debt/GDP ratio

The “public expenditure/GDP” ratio is an indication of the balance between public sector and private sector provision. Also, it provides an indication of the level to which government intervene in the economy and society, the government influence on the availability and consumption of public services.

Since public expenditure has to be financed, the higher public expenditure ratio, the higher the tax/GDP ratio and/or the public sector borrowing/GDP ratio. Moreover, in public sector borrowing leads to a rise in the public sector debt/GDP ratio.

The tax/GDP ratio provides an indication of the extent to which the state appropriates citizens’ income directly from employment, interest, dividends, capital gains and wealth or indirectly by taxing subsequent expenditure.

Meanwhile, the public sector borrowing/GDP ratio reflects the excess of public expenditure over the public sector revenue. It is affected by investment in physical infrastructure (roads, schools, hospitals), the extent to which current generation is living at the expense of future generations of taxpayers, views of legitimacy of negative rights versus positive rights. The public sector borrowing/GDP ratio will fall if those investment increase GDP by more than the cost of their provision or current income and current expenditure are balance over economic cycle. That means the economy moves from recession to recovery and GDP rises over the longer term as economic growth occurs. Thus public borrowing does not get out of control if government ensures that borrowing is repair once the recession over.

The public sector debt/GDP ratio is measure of the unavoidable commitment of public finance to paying the annual interest on that debt and also repaying over a period of years the original sums borrowed.

Thus, the four public finance/GDP ratios are interlinked, they provide strategically different measures of the relative scale of public finance and they have different implications for public policy. The four public finance/GDP ratios vary as a result of changes in both the numerator and

denominator. The changes in GDP lead to decrease the share of public finance in GDP. The four public finance/GDP ratios tends to fluctuate from year to year. The four public finance/GDP ratios rise as an economy moves into a downturn or recession and fall as an economy moves from recession to full employment. Three causes of fluctuations in the public finance/GDP ratios are the economic cycles, economic shocks not associated with the economic cycle, discretionary government changes to the public finances.

Additionally, the public finance/GDP ratios display a long-term rising trend. Many analysts have sought to explain the rising trend in the public expenditure/GDP ratio. There is a two stage approach: develop a theory of growth of public expenditure and test that theory against the evidence. There are two alternative hypotheses in this approach. First, expenditure determines finance, In this case the primary decision is how much to spend and the amount of public finance raised depending on that decision. This is referred to as the “spend and tax model”. Second, finance determines expenditure, In this case government only spends what revenues they can raise from taxation, borrowing, user-charges and so on. This is referred to as the “tax and spend model”. The theories can attempt to explain: the totality of public expenditure, the individual components of public spending and growth of expenditures. A rising long-term trend in public finance is a cause for concern. The adverse outcomes will be created: high taxes destroy the incentives for enterprises and for self-reliance, high welfare payments and service levels create a dependency culture, so growth of the state is at the expense of the private sector, and government failure may be more profound than market failure. Therefore, the state should restrict itself to undertaking core functions and allow or enable the private sector to provide as many public sector services as possible. The state should be come enabling state than provider state. This is referred to as the shift from “government to governance”.

2.2 Endogenous growth model

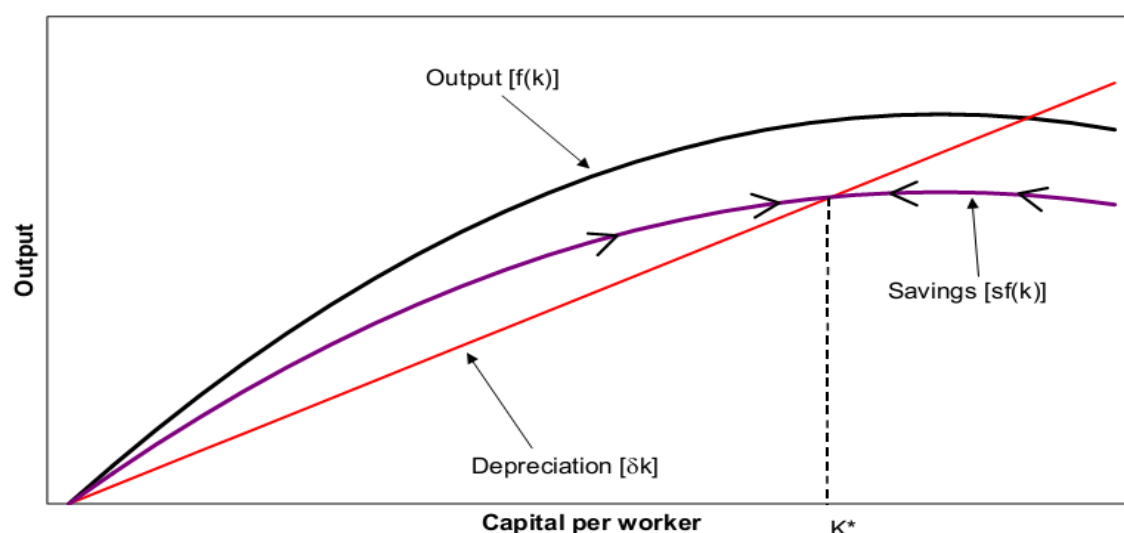
2.2.1 The Neoclassical model of exogenous growth

Understanding economic growth has long been a central concern in economics. Adam Smith's with *Wealth of Nations* (1776) emphasised the rising ratio of capital to labour as a key ingredient in economic growth. More generally, increasing the quantity of inputs (factors of production) will (usually) lead to an increase in the quantity of outputs, so studying factor accumulation is a

key strand in attempts to explain economic growth. The second ingredient of economic thinking about growth is that of diminishing returns, which relates to the link between factor accumulation and output growth. In particular, diminishing returns capture the idea that doubling the amount of capital will in general lead to less than a doubling of output.

The accumulation of productive factors and the existence of diminishing returns have found modern expression in neoclassical production theory in the form of a production function. The production function summarises the amount of output that can be produced with various combinations of inputs. The most commonly used form of the production function models output as depending on just two inputs—capital and labour, according to a particularly convenient mathematical form (the Cobb-Douglas production function). It is commonly assumed that the production function is “constant returns to scale”. This means that a doubling of all inputs will lead to a doubling of output. However, decreasing returns to scale apply to an input if other inputs do not increase. For instance, if the amount of capital is increased without any increase in labour, each subsequent addition of capital will yield smaller and smaller increments to output. The neoclassical growth model uses such a production function to examine how output grows as inputs are accumulated. The key insights can be gained by assuming that the amount of labour input is fixed, and that capital can be accumulated by saving a fixed proportion of output each period and investing it in new capital, David C. Maré (2004). The model is summarised in figure 1.

Figure 1 : *The neoclassical growth model*



The upper line shows the amount of output that is produced with different levels of capital. It curves as it does because of diminishing returns—the growth in output as capital increases gets less and less. Savings are shown as a fixed proportion of output. The straight line captures the amount of saving that is required just to keep up with capital depreciation. If capital per worker is less than the amount shown as K^* , savings exceed depreciation, and some saving is available to increase capital. Over time, capital will increase, as shown by the arrowheads on the savings curve. To the right of K^* , savings are insufficient to meet depreciation, and capital decreases. In the long run, capital per worker will end up fixed at K^* . The clear implication from this model is that in the long run, growth stops. Moreover, growth gets slower as capital per worker approach K^* from below. Not only does the amount of investment decline, but the output generated by an additional dollar of investment also gets smaller. The neoclassical growth model so far is a model of no growth, at least in the long run.

Much of the recent literature distinguishes between exogenous and endogenous growth models. We have studied the former, and now we look at the latter. What is the difference? The importance difference is that in the former the steady-state growth rate is determined exogenously, e.g., technical change. In the latter, it is determined endogenously. The models are interesting because they often leave a role for policy

In the past, there has been considerable debate within the economics. Endogenous growth theory is one of the mainstream economics approaches to modelling economic growth.

Unlike the neoclassical growth model, where fiscal effects alter the level of the long-run output path, the endogenous growth model permits fiscal effects to alter the slope of the long-run output path, as illustrated for example in Barro (1990).

2.2.2 *Endogenous growth model*

In the mid-1980s it became increasingly clear that the standard neoclassical growth model was theoretically unsatisfactory as a tool to explore the determinants of long-run growth. We have seen that the model without technological change predicts that the economy will eventually converge to a steady state with zero per capita growth. The fundamental reason is the diminishing returns to capital. One way out of this problem was to broaden the concept of

capital, notably to include human components, and then assume that diminishing returns did not apply to this broader class of capital. However, another view was that technological progress in the form of the generation of new ideas was the only way that an economy could escape from diminishing returns in the long run. Thus it became a priority to go beyond the treatment of technological progress as exogenous and, instead, to explain this progress within the model of growth. However, endogenous approaches to technological change encountered basic problems within the neoclassical model—the essential reason is the non-rival nature of the ideas that underlie technology.

The key property of this class of endogenous-growth models is the absence of diminishing returns to capital. The simplest version of a production function without diminishing returns is the AK function:

$$Y = AK \quad (2.1)$$

A is a positive constant that reflects the level of the technology in (2.1) equation. The global absence of diminishing returns may seem unrealistic, but the idea becomes more plausible if we think of K in a broad sense to include human capital. Output per capita is $y = Ak$, and the average and marginal products of capital are constant at the level $A > 0$.

The production function :

$$Y(t) = F[K(t), L(t), T(t)] \quad (2.2)$$

Where $Y(t)$ is the flow of output produced at time t .

Capital, $K(t)$, represents the durable physical inputs, such as machines, buildings, pencils, and so on.

The third input is the level of knowledge or technology, $T(t)$. Workers and machines cannot produce anything without a formula or blueprint that shows them how to do it. This blue print is what we call knowledge or technology. Technology can improve over time.

We assume that capital is a homogeneous good that depreciates at the constant rate $\delta > 0$.

The net increase in the stock of physical capital at a point in time equals gross investment less depreciation.

We assume a one-sector production technology in which output is a homogeneous good that can be consumed, $C(t)$, or invested, $I(t)$. Investment is used to create new units of physical capital, $K(t)$, or to replace old, depreciated capital. In a closed economy with no public spending, all output is devoted to consumption or gross investment. So $Y(t) = C(t) + I(t)$. By subtracting $C(t)$ from both sides and realizing that output equals income, we get that, in this simple economy, the amount saved, $S(t) = Y(t) - C(t)$, equals the amount invested, $I(t)$. Let s is saving rate, so that $(1-s)$ is fraction of output that is consumed. In closed economy, the saving $I(t) = S(t)$. In other word, the saving rates of a represents the fraction of GDP that an economy devotes to investment.

$$\dot{K}(t) = I(t) - \delta K(t) = s \cdot F[K(t), L(t), T(t)] - \delta K(t) \quad (2.3)$$

Where a dot over a variable, such as $K(t)$, denotes differentiation with respect to time, $\dot{K}(t) = \delta K(t) / \delta(t)$ and $0 \leq s \leq 1$. Equation (2.3) determines the dynamics of K for a given technology and labor. If we divide both sides of this equation by L , we get:

$$\dot{K}/L = sF(k) - \delta k \quad (2.4)$$

We can take the derivative of $k = K/L$ with respect to time to get:

$$\dot{k} = \frac{d(K/L)}{dt} = \dot{K}/L - nk \quad (2.5)$$

From equation (2.4) and (2.5) we get:

$$\dot{k} = \frac{d(K/L)}{dt} = sF(k) - \delta k - nk \quad (2.6)$$

If we substitute *the* $F(k)/k=A$ in equation (2.6) which shows how an economy's per capita incomes converges toward its own steady-state value and to the per capita incomes of other nations. Where Growth rate on k is given by:

$$\gamma_k = \dot{k}/k = sf(k)/k - (n + \delta)$$

on substituting A , we get , $\gamma_k = sA - (n + \delta)$

Since $Y=AK$, $\dot{y}/y = \dot{k}/k$

In addition, since $c = (1 - s) \cdot y$, $\dot{c}/c = \dot{k}/k$ also applies. Hence, all the per capita variables in the model always grow at the same, constant rate, given by:

$$\gamma^* = sA - (n + \delta) \quad (2.7)$$

Note that an economy described by the AK technology can display positive long-run per capita growth without any technological progress. Moreover, the per capita growth rate shown in equation (2.7) depends on the behavioral parameters of the model, including s , A , and n . For example, unlike the neoclassical model, a higher saving rate, s , leads to a higher rate of long-run per capita growth, γ^* . Similarly if the level of the technology, A , improves once and for all (or if the elimination of a governmental distortion effectively raises A), then the long-run growth rate is higher. Changes in the rates of depreciation, δ , and population growth, n , also have permanent effects on the per capita growth rate.

However, we can observe that $Y=AK$ technology displays a positive long-run per capita growth without any exogenous technological development. The per capita growth depends on behavioural factors of the model as the saving rate and population. It is unlike neoclassical model, which is higher saving, s , promotes higher long run per capita growth γ^*

2.2.3 Endogenous growth versus exogenous theory

In neo-classical growth models, the long-run rate of growth is exogenously determined by either the savings rate (the Harrod-domar model) or the rate of technical progress (Solow model). However, the savings rate and rate of technological progress remain unexplained. Endogenous

growth theory tries to overcome this shortcoming by building macroeconomic models with microeconomic foundation. Households are assumed to maximize utility subject to budget constraints while firms maximize profits. Crucial importance is usually given to the production of new technologies and human capital. The engine for growth can be as simple as a constant return to scale production function (the AK model) or more complicated set ups with spillover effects (spillovers are positive externalities, benefits that are attributed to costs from other firms), increasing numbers of goods, increasing qualities, etc.

Often endogenous growth theory assumes constant marginal product of capital at the aggregate level, or at least that the limit of the marginal product of capital does not tend towards zero. This does not imply that larger firms will be more productive than small ones, because at the firm level the marginal product of capital is still diminishing. Therefore, it is possible to construct endogenous growth models with perfect competition. However, in many endogenous growth models the assumption of perfect competition is relaxed, and some degree of monopoly power is thought to exist. Generally monopoly power in these models comes from the holding of patents. These are models with two sectors, producers of final output and an R&D sector. The R&D sector develops ideas that they are granted a monopoly power. R&D firms are assumed to be able to make monopoly profits selling ideas to production firms, but the free entry condition means that these profits are dissipated on R&D spending.

2.3 Public finance in endogenous growth model

Public spending represents one of the most important policy instruments for governments. Consequently, they are expected to engender large effects on economic growth. The neoclassical growth model of Solow (1956), or its version in optimal growth formalized by Cass (1965) and Koopmans (1965) following previous evidence in Ramsey (1928), leaves little place for public policy to economic growth interaction. Long-term economic growth is zero (or exogenous), thus government decisions are ineffective in the long-run. Moreover, they at best leave unchanged the short-run growth rate or equilibrium levels of different macroeconomic variables, without any possibility for positive effects. After almost thirty years of stagnation, these topics came alive following the work of Romer (1986), who constructed a model that allows for an endogenous positive long-run economic growth rate. This result generated an optimistic wave, as many studies reopened the question of public policy influence on economic growth. However, results

were highly disappointing and not very different from those in exogenous growth models, since government actions were detrimental or neutral to long-run economic growth. The Barro (1990) model constitutes without any doubt a breaking point in this evolution. By allowing for productive public spending, i.e. public spending that increases private capital marginal productivity, as for example infrastructure or property rights, the author identifies the existence of a positive correlation between government spending and long-run economic growth.

These results synthesize the main findings from endogenous growth models or optimal taxation models with long-run growth. Proposition below summarizes these findings:

Proposition:

- (a) Wasteful public spending has no effect on long-run growth or the steady-state private capital ratio in models that lack perpetual growth;
- (b) If we consider the financing of wasteful spending, lump-sum taxes leave growth (or the capital stock) unaffected, while flat-rate taxes on output diminish it;
- (c) In a more general view, inspired from optimal taxation, flat-rate taxes on any accumulating factor (output, private capital, human capital etc) diminish long-run growth, while flat-rate taxes on non-accumulating factors (labour, consumption in models with inelastic labour supply) do not affect long-term growth.

While these results are highly disappointing, since long-run growth can at most not be reduced by public policies, one could ask if theory can provide a model in line with Aschauer's (1989) results. The answer to this question is positive: Barro (1990) proposed an endogenous growth model with productive public spending where fiscal policy can raise economic growth.

2.3.1 Government spending in a simple model of endogenous growth -Barro model

He extended models of endogenous economic growth to incorporate a government sector. Production involves private capital (broadly defined) and public services. There is a constant returns to scale in the two factors, but diminishing returns to each separately. Public services are financed by a flat-rate income tax.

The analysis builds on both aspects of incorporating a public sector into a simple, constant-returns model of economic growth. Because of familiar externalities associated with public expenditures and taxes, the privately-determined values of saving and economic growth turn out to be sub-optimal. Hence there are interesting choices about government policies, as well as empirical predictions about the relations among the size of government, the saving rate, and the rate of economic growth.

- **Endogenous Growth Models with Optimizing Households**

Endogenous growth models build on constant re-turns to a broad concept of capital. The representative, infinite-lived household in a closed economy seeks to maximize overall utility, as given by:

$$U = \int_0^{\infty} u(c) e^{-\rho t} dt \quad (2.7)$$

where c is consumption per person and $\rho > 0$ is the constant rate of time preference. Population, which corresponds to the number of workers and consumers, is constant.

The utility function:

$$u(c) = \frac{c^{1-\sigma} - 1}{1-\sigma} \quad (2.8)$$

Where $\sigma > 0$, so that marginal utility has the constant elasticity $-\sigma$. Each household-producer has access to the production function: $y=f(k)$

Where y is output per worker and k is capital per worker. Each person works a given amount of time; that is, there is no labour leisure choice. As is well known, the maximization of the representative household's overall utility in equation (2.9) implies that the growth rate of consumption at each point in time is given by:

$$\frac{\dot{c}}{c} = \frac{1}{\sigma} \cdot (f' - \rho) \quad (2.10)$$

Where f' is the marginal product of capital. Instead of assuming diminishing returns ($f'' < 0$), Barro followed Rebelo (1991) by assuming constant returns to a broad concept of capital; that is $y = Ak$

Where $A > 0$ is the constant net marginal product of capital

Substituting $f' = A$ into equation (2.10) yields:

$$\gamma = \frac{\dot{c}}{c} = \frac{1}{\sigma} \cdot (A - \rho) \quad (2.11)$$

Where, the symbol denotes a per capita growth rate. Assuming that the technology is sufficiently productive to ensure positive steady-state growth, but not so productive as to yield unbounded utility. The corresponding inequality conditions are:

$$A > \rho > A(1 - \sigma) \quad (2.12)$$

The first part implies $\rho > 0$. The second part, which is satisfied automatically if $A > 0$, $\rho > 0$, and $\sigma > 1$, guarantees that the attainable utility is bounded.

In this model the economy is always at a position of steady-state growth in which all variables c , k , and y grow at the rate γ . Given an initial capital stock, $k(0)$, the levels of all variables are also determined. In particular, since net investment equals γk , the initial level of consumption is

$$c(0) = k(0) \cdot (A - \gamma) \quad (2.13)$$

Barro modified the analysis to incorporate a public sector. g is the quantity of public services provided to each household-producer. Assuming that these services are provided without user charges and are not subject to congestion effects (which might arise for highways or some other public services). That is, the model abstracts from externalities associated with the use of public services.

He considered initially the role of public services as an input to private production. It is this productive role that creates a potentially positive linkage between government and growth.

Production now exhibits constant returns to scale in k and g together but diminishing returns in k separately. That is, even with a broad concept of private capital, production involves decreasing returns to private inputs if the (complementary) government inputs do not expand in a parallel manner. As given constant returns to scale, the production function can be written as:

$$y = \Phi(k, g) = k \cdot \Phi\left(\frac{g}{k}\right) \quad (2.14)$$

Where satisfies the usual conditions for positive and diminishing marginal products, so that $\Phi' > 0$ and $\Phi'' < 0$. The variable k is the representative producer's quantity of capital, which would correspond to the per capita amount of aggregate capital, g can be measured correspondingly by the per capita quantity of government purchases of goods and services, the production function is Cobb-Douglas, so that:

$$\frac{y}{k} = \Phi\left(\frac{g}{k}\right) = A\left(\frac{g}{k}\right)^\alpha \quad (2.15)$$

Where $0 < \alpha < 1$

Assuming that government expenditure is financed contemporaneously by a flat rate income tax:

$$g = T = \tau y = \tau \cdot k \cdot \Phi\left(\frac{g}{k}\right) \quad (2.16)$$

Where T is government revenue and τ is the tax rate

The production function in equation (2.16) implies that the marginal product of capital is

$$\frac{\partial y}{\partial k} = \Phi\left(\frac{g}{k}\right) \cdot \left(1 - \Phi' \cdot \frac{g}{y}\right) = \Phi\left(\frac{g}{k}\right) \cdot (1 - \mu) \quad (2.17)$$

Where μ is the elasticity of y with respect to g (for a given value of k), so that $0 < \mu < 1$ Private optimization still leads to a path of consumption that satisfies equation (2.11), except that f' is replaced by the private marginal return to capital. With the presence of a flat-rate income tax at rate τ , this return is $(1 - \tau) \cdot (\partial y / \partial k)$, where $(\partial y / \partial k)$ is given from equation (2.16). Therefore, the growth rate of consumption is now:

$$\gamma = \frac{\dot{c}}{c} = \frac{1}{\sigma} \cdot \left[(1 - \tau) \cdot \phi\left(\frac{g}{k}\right) \cdot (1 - \mu) - \rho \right] \quad (2.18)$$

Different sizes of governments—that is, different values for g/y and τ have two effects on the growth rate, in equation (2.18). An increase in τ reduces γ , but an increase in g/y raises $(\partial y / \partial k)$, which raises γ . Typically, the second force dominates when the government is small, and the first force dominates when the government is large. A simple example is the Cobb-Douglas technology, in which μ —the elasticity of y with respect to g —is constant. In this case, $\mu = \alpha$, where $0 < \alpha < 1$ in equation (2.15). The conditions $\tau = g/y$ and $g/k = (g/y) \cdot \phi(g/k)$ imply that the derivative of γ with respect to g/y is (when μ is constant)

$$\frac{d\gamma}{d(g/y)} = \frac{1}{\sigma} \cdot \phi\left(\frac{g}{k}\right) \cdot (\phi' - 1) \quad (2.19)$$

Hence the growth rate increases with g/y if g/k is small enough so that $\phi' > 1$ and declines with g/y if g/k is large enough so that $\phi' < 1$. With a Cobb-Douglas technology, the size of government that maximizes the growth rate corresponds to the natural condition for productive efficiency: $\phi' = 1$. Since $\alpha = \mu = \phi'(g/y)$, it follows that $\alpha = g/y = \tau$. Roughly speaking, to maximize the growth rate, the government sets its share of gross national product, g/y , to equal the share it would get if public services were a competitively supplied input of production.

Barro-style models of endogenous growth imply that economic growth will initially rise with an increase in taxes directed toward economically “productive” expenditures (e.g., education, highways, public safety)

Building on the evidence above, the goal of this section is to propose a discussion over the importance of productive public spending in the growth theory. Three characteristics of the Barro (1990) was regroup in Proposition 3 by Alexandru (2008):

Proposition 3:

(a) The Barro (1990) model with productive public spending allows for long-run endogenous growth;

- (b) Consequently, it also allows for studying long-run growth effects of the government policies;
- (c) In the presence of public spending, government policies may induce positive effects on long-run economic growth.

Public spending and long-term growth

In a strictly economic growth vision, the Barro (1990) model allows to obtain long-term growth. Indeed, as compared to the Solow model or its version in optimal growth by Cass-Koopmans-Ramsey, in the Barro (1990) model the per capita production function yields (as we have seen) constant returns to scale. Consequently, there exists a positive long-run growth rate that is model-generated or endogenous, whereas in exogenous growth models this rate comes at best from outside the model. As important as this contribution might seem, the Barro (1990) model represents, from this point of view, another seminal papers among others. Precisely, it joins Romer (1986) or Lucas (1988) work on externality-driven long-run economic growth and Aghion and Howitt (1992) contributions on innovation-driven economic growth. To put it differently, one can obtain long-run growth even without productive public spending.

The impact of government policy on long-term growth

Due to the presence of long-run growth, the Barro (1990) model implicitly opens the way to the analysis of government policies impact on long-run economic growth. However, in any model with long-term economic growth, one can study the effect of different public policies on economic growth.

Productive public spending and economic growth

In the Barro (1990) model, government makes productive public spending that positively affects private capital marginal productivity. This is, in our view, the most important contribution of this model. Below, there are some of the main results that draw on this assumption.

First, because public spending enhances private capital accumulation, it also enhances long-term economic growth. Thus, generally speaking, it is the first time when a fiscal policy decision augments long-run growth. Indeed, in endogenous growth models without productive spending, all government spending were at best neutral, if not harmful to economic growth (the equivalent

is true on steady-state aggregates, i.e. output or capital, in exogenous growth models), as we tried to highlight in the previous two sections.

Second, let us consider the financing of productive public spending, by starting with taxes financing. Financing productive spending with lump-sum taxes (or, equivalently, with consumption taxes, provided that labour supply is inelastic) is always growth-enhancing. However, what is more important is that the use of flat-rate taxes may be desirable in terms of long-run economic growth. This result has deep implications. On the one hand, it implies that raising distortionary taxes may be advantageous for long-run growth. On the other hand, this is the first model where long-run distortionary taxes (on accumulating factors) are strictly positive.

2.3.2 *The Devarajan et al. (1996) model with optimal fiscal policy*

It is well-understood in the endogenous growth literature that fiscal policy has potentially important effects on the long-run growth rate of the economy. In this context, the effect of productive government spending on the growth rate becomes important. In a seminal article, Barro (1990) models this in terms of public services – a flow variable – being in the economy's production function. Futagami et al. (1993) introduce public capital – a stock variable – instead, and this is sufficient to give rise to transitional dynamics. Also in an endogenous growth framework, Ghosh and Roy (2004) introduce both public capital and public services as inputs in the production of the final good, and demonstrate that optimal fiscal policy in an economy depends not only on the tax rate but also on the apportionment of tax revenues between the accumulation of public capital and the provision of public services.

Fiscal policy is relevant to many types of expenditure such as spending on education, defence, health, transportation, social security, government consumption and each type of expenditure may have different impact on growth. Thus, over two decades, many economists including Devarajan (1996), Chen (2006) and Gregoriou (2008) extended Barro's model to consider the effect of composition of government spending for growth. By giving the elasticity coefficients for different components of government spending, their models can determine the optimal size and structure of public sector with economic growth. They consider two productive services (i.e., both flow variables) in the constant elasticity of substitution (CES) production function in their

theoretical model – one more productive than another, and derive the important result that a shift in favour of an ‘objectively’ more productive type of expenditure may not raise the growth rate if its initial share is ‘too high’. They also try to determine empirically which components of public expenditure are more productive in developing countries and find, somewhat surprisingly, that an increase in the share of current expenditure rather than capital expenditure has positive and statistically significant growth effects.

Along with the development of theoretical models in this area, experimental studies were carried out by many economists such as Aschauer (1989), Barro (1990, 1991) and Easterly and Rebelo (1993). Generally, most articles showed an increase in public investment has a positive impact on economic growth. On the contrary, the increase in consumer government can reduce economic growth.

In this section we first write down the key equations of the Devarajan et al. (1996) model, and then characterise the optimal fiscal policy (henceforth abbreviated as OFP) of the government. They consider a CES technology (where y is output, k is private capital, and g_1, g_2 are two types of government spending), which is given by:

$$y = [\alpha k^{-\xi} + \beta g_1^{-\xi} + \gamma g_2^{-\xi}]^{-1/\xi} \quad (2.20)$$

Where $\alpha \geq 0, \beta \geq 0, \gamma \geq 0, \alpha + \beta + \gamma = 1, \xi \geq 1$

The government’s budget constraint is :

$$\tau y = g_1 + g_2 \quad (2.21)$$

where τ is the (constant over time) income tax rate.

The shares of government expenditure that go toward g_1 and g_2 are given by:

$$g_1 = \phi \tau y \text{ and } g_2 = (1 - \phi) \tau y \quad (2.22)$$

Where: $0 \leq \phi \leq 1$

The representative consumer’s utility function is isoelastic, and derived from private

consumption, and is given by:

$$u(c) = \frac{c^{1-\sigma}-1}{1-\sigma} \quad (2.23)$$

where $\rho > 0$ is the rate of time preference. The representative consumer's constraint is

$$\dot{k} = (1-\tau)y - c \quad (2.24)$$

Devarajan et al. (1996) derive an expression for the ratio, g/k given by:

$$\frac{g}{k} = \left[\frac{\tau^\xi - \beta\phi^{-\xi} - \gamma(1-\phi)^{-\xi}}{\alpha} \right]^{1/\xi} \quad (2.25)$$

and for the economy's (endogenous) growth rate given by:

$$\lambda = \frac{\alpha(1-\tau) \left\{ \alpha\tau^\xi / [\tau^\xi - \beta\phi^{-\xi} - \gamma(1-\phi)^{-\xi}] \right\}^{-(1+\xi)/\xi} - \rho}{\sigma} \quad (2.26)$$

We take equations (2.20) – (2.24) as being given exactly as in Devarajan et al. (1996). The representative agent's problem is to choose c and k to maximise utility—which is U in (2.23)—subject to (2.24), taking τ , g_1 and g_2 , and also k_0 as given. The first order conditions give rise to the Euler equation:

$$\rho + \frac{\dot{c}}{c} = (1-\tau) \frac{\partial y}{\partial k} \quad (2.27)$$

The task of the government in a decentralised economy is to run the public sector in the nation's interest, taking the private sector's choices as given. In other words, the τ and g to maximise the representative agent's government's problem is to choose utility subject to (2.21), (2.24) and (2.27), taking k as given. The first order conditions with respect to τ , g_1 and g_2 respectively yield :

$$\mu = \chi \quad (2.28)$$

$$\mu(1-\tau)\frac{\partial y}{\partial g_1} + \chi\tau\frac{\partial y}{\partial g_1} - \chi = 0 \quad (2.29)$$

$$\mu(1-\tau)\frac{\partial y}{\partial g_2} + \chi\tau\frac{\partial y}{\partial g_2} - \chi = 0 \quad (2.30)$$

where μ and χ are the co-state variables associated with the private and government budget constraints – (2.24) and (2.21) – respectively. From (2.29) and (2.30), we obtain

$$\frac{\partial y}{\partial g_1} = \frac{\partial y}{\partial g_2} = 1$$

From which we can obtain the optimal ratio of the two public goods when we have a benevolent government:

$$\left(\frac{g_1}{g_2}\right)^* = \left(\frac{\beta}{\gamma}\right)^{\frac{1}{1+\zeta}} \quad (2.31)$$

The value of g/k is given in (2.25) above. Hence, using (2.31), we can obtain the individual g_1/k and g_2/k : values of

$$\frac{g_1}{k} = \left[\frac{(\beta/\gamma)^{(1/(\zeta+1))}}{(\beta/\gamma)^{(1/(\zeta+1))} + 1} \right] \left[\frac{\tau^\zeta - \beta\phi^{-\zeta} - \gamma(1-\phi)^{-\zeta}}{\alpha} \right]^{1/\zeta} \quad (2.32)$$

$$\frac{g_2}{k} = \left[\frac{1}{(\beta/\gamma)^{(1/(\zeta+1))} + 1} \right] \left[\frac{\tau^\zeta - \beta\phi^{-\zeta} - \gamma(1-\phi)^{-\zeta}}{\alpha} \right]^{1/\zeta} \quad (2.33)$$

From $\frac{\partial y}{\partial g_1} = 1$, we obtain $g_1^* = \beta^{\frac{1}{1+\zeta}} \cdot y$ (2.34)

And from $\frac{\partial y}{\partial g_2} = 1$, we obtain $g_2^* = \gamma^{\frac{1}{1+\zeta}} \cdot y$ (2.35)

We are now in a position to find an expression for the optimal tax rate for the decentralised economy under a benevolent government. From the government budget constraint given by (2.21), and given the optimal shares of the two productive inputs given by (2.34) and (2.35) above, the optimal tax rate is given by:

$$\tau^* = \beta^{\frac{1}{1+\zeta}} + \gamma^{\frac{1}{1+\zeta}} \quad (2.36)$$

Finally, the optimal share of the first public service from a welfare-maximising point of view is obtained by combining equations (2.22), (2.34) and (2.36)

$$\Phi^* = \frac{\beta^{1/(\zeta+1)}}{\beta^{1/(\zeta+1)} + \gamma^{1/(\zeta+1)}} \quad (2.37)$$

Clearly then, the optimal share of second public service is obtained by combining equations (2.22), (2.35) and (2.36):

$$1 - \Phi^* = \frac{\gamma^{1/(\zeta+1)}}{\beta^{1/(\zeta+1)} + \gamma^{1/(\zeta+1)}} \quad (2.38)$$

Combining (2.31), (2.37) and (2.38), we obtain the following equation:

$$\left[\frac{g_1}{g_2} \right] = \frac{\Phi^*}{1 - \Phi^*} = \left(\frac{\beta}{\gamma} \right)^{\frac{1}{1+\zeta}} \quad (2.39)$$

Finally, one can derive an expression for the growth rate that could be achieved in an economy where a benevolent government choose fiscal instrument τ , g_1 , g_2 to maximise the welfare of the representative agent. This optimal growth rate expression can be obtained by combining equation (2.26) with equations (2.26), (2.27) and (2.28), and is given by:

$$\begin{aligned}
\lambda^* &= \frac{\alpha(1-\tau^*) \left\{ \alpha \tau^{*\zeta} / \left[\tau^{*\zeta} - \beta \Phi^{*-\zeta} - \gamma(1-\Phi^*)^{-\zeta} \right] \right\}^{-(1+\zeta)/\zeta} - \rho}{\sigma} \\
&= \frac{\alpha^{-1/\zeta} \left[1 - \beta^{1/(\zeta+1)} - \gamma^{1/(\zeta+1)} \right]^{(1+2\zeta)/\zeta} - \rho}{\sigma}
\end{aligned} \tag{2.40}$$

We have thus analytically characterised optimal fiscal policy in the Devarajan et al. (1996) model. As is clear from equations (2.36) – (2.40) above, we obtain closed-form solutions to all the important fiscal variables in terms of the key technological and behavioural parameters of the model. So, there are interesting implications for policy when we consider the case where the government formulates fiscal policy with a view to maximising the welfare of the representative agent, rather than taking as ‘given’ the tax rate and expenditure shares on the two public goods.

2.4 *Previous study*

Government size and economic growth

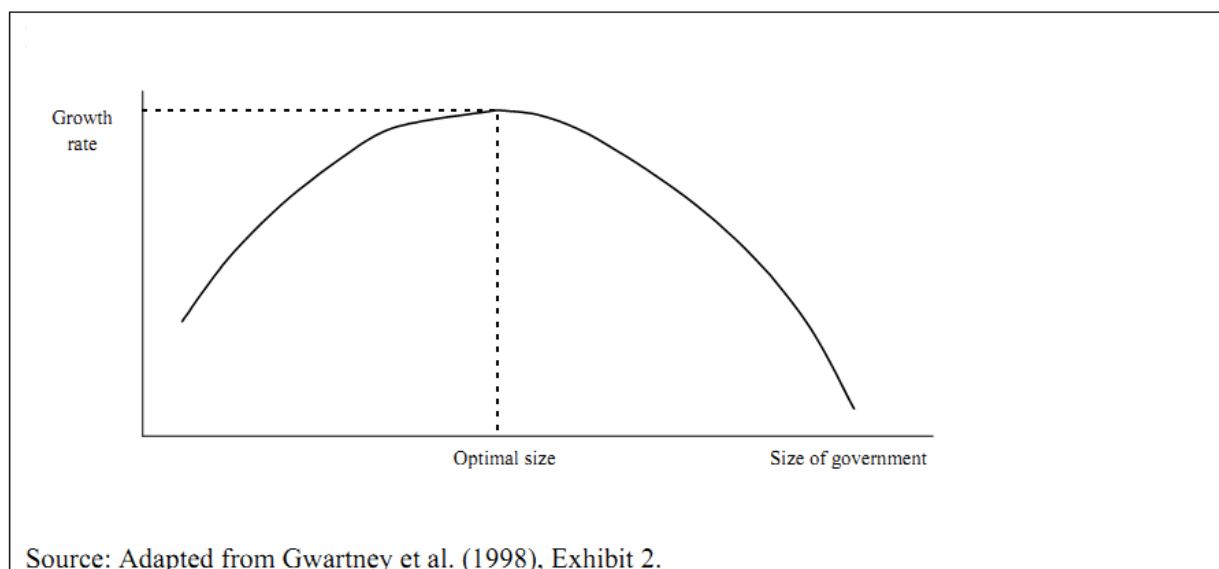
The role of fiscal policy in the long-run growth process has been central in macroeconomics especially since the appearance of endogenous growth models. Different authors have focused on different types of fiscal policy as engines of balanced growth. In recent years, a lot of empirical research has concentrated on possible relations between the share of tax or public expenditure and countries growth performance. These studies use tax-to-GDP ratios as one measure of the aggregate extent of government involvement and attempt at finding empirical evidence for the assumption of a negative correlation between the overall tax burden and economic performance. For example, Barro (1989), with data from 98 countries in the post-World War II period, found that government consumption decreases per capita growth, while public investment does not affect growth, a negative impact of the tax burden on the country’s growth performance. In a cross-countries section, Easterly and Robelo (1993) find significant and negative correlation between budget deficits and economic growth. More recently, Cassou and Lansing (1999) accept the dual role of government spending and taxes and therefore investigate, in the general-equilibrium endogenous growth model, simultaneously the observed public capital policy and the observed tax policy. In addition the impact of the size of government on economic performance has been investigated, Barro (1991), Hanson and Henrekson (1994). In general, these studies suggest that large government are associated with slower growth. However, the relationship

between government size and economic performance is likely to be non-linear and the negative effect mentioned is most likely to be visible only when government size exceed some optimal size, Barro (1990) concludes that economic performance is an inverted *U shape function of government size*.

There is a strong negative relation between the public spending share and economic growth in the OECD-countries. An increase in the public spending share of ten percentage points appear to reduce the yearly growth rate with about 1.5 percentage points" (Henrekson et al. 1994, p. 9).

Gwartney (1998, p27) gets the result that “the level of government expenditure that maximize the performance of the economy would place government expenditure at 15 percent or less of GDP”. The figure is obtained by the following steps: they presented theoretical arguments which result in an inverted U-shaped relationship between economic growth and the size of government, assuming that the government is installed to perform core functions, where its expansion contributes to economic growth until the optimal size of government is reached. Further expansion into non-core functions is subject to diminishing or even negative returns to economic growth. In their empirical assessment, the authors derived the *optimal government size*.

Figure 2: *Government size and economic growth*



James Gwartney, Robert Lawson, Randall Holcombe (1998) studied about the size and function government and economic growth and indicated that excessively large government has reduced economic growth. Moreover, their study also showed some results:

1. Government provision of both (a) a legal and physical infrastructure for the operation of a market economy and (b) a limited set of public goods can provide a framework conducive for economic growth. However, as governments move beyond these core functions, they will adversely affect economic growth because of (a) the disincentive effects of higher taxes, (b) diminishing returns as governments undertake activities for which they are ill-suited, and (c) an interference with the wealth creation process, because governments are not as good as markets at adjusting to changing circumstances and finding innovative new ways of increasing the value of resources.
2. In the United States, government expenditures as a share of GDP have grown during the last several decades. At the same time, the investment rate has declined and the growth rates of both productivity and real GDP have fallen. An empirical analysis of the data from 23 OECD countries shows a strong negative relationship between both (a) the size of government and GDP growth and (b) increases in government expenditures and GDP growth. A 10 percentage point increase in government expenditures as a share of GDP is associated with approximately a one percentage point decline in the growth rate of real GDP.
3. An analysis of a larger data set of 60 countries reinforces the conclusions reached by analyzing OECD countries. After adjustment for cross-country differences in the security of property rights, inflation, education, and investment, higher levels of government spending as a percentage of GDP exert a strong negative impact on GDP growth.
6. The OECD countries currently spend 15 percent of GDP or less on the core functions of government-protection of persons and property, national defense, education, monetary stability, and physical infrastructure. When governments move beyond these core functions, the empirical evidence indicates that they retard economic growth.

Vedder and Gallaway (1998) perform separate estimation for the federal level and the sub-federal level of the United State. According to their results, the optimal size of US federal spending is 13.4 percent of GDP, and for state and local spending is 11.4 percent of GDP

Another VAR approach is used by Perotti (2005) to study the effect of fiscal policy on GDP and macroeconomic variable in five OECD countries. He concluded that the estimated effects of fiscal policy tend to be small, and the effect of government spending shocks and tax cuts on GDP have become weaker

Benos and Nikos (2009) studies whether a reallocation of the components of public spending and revenues can enhance economic growth using data on 14 EU countries during 1990-2006. The results provide support for endogenous growth models. Specifically, the findings are: a) public expenditures on infrastructure (economic affairs, general public services) and property rights protection (defense, public order-safety) exert a positive impact on growth; b) distortionary taxation depresses growth; c) government expenditures on human capital enhancing activities (education, health, housing-community amenities, environment protection, recreation-culture-religion) and social protection do not have a significant growth effect.

Economic growth is the most important macroeconomic variable reflecting the overall performance of a society. Among the factors that determine the economic growth, government spending is of particular interest in this paper. The threshold government size is a point at which any rise in government spending lower than this value will have positive effects, while more than that will have negative effects on economic growth. The positive effects may be due to providing infrastructures, and public goods and the negative effects could be due to the crowding-out effect of government monopolistic activities.

Bose, M Emranul and Denise (2003) examined the growth effects of government expenditure for a panel of thirty developing countries over the decades of the 1970s and 1980s, with a particular focus on sectoral expenditures. Their methodology improves on previous research on this topic by explicitly recognizing the role of the government budget constraint and the possible biases arising from omitted variables. Firstly, the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant. Secondly, at the sectoral level, government investment and total expenditures in education are the only outlays

that are significantly associated with growth once the budget constraint and omitted variables are taken into consideration.

Karim (2006) examine the long run relationship between total government expenditure, revenue (tax and nontax) and economic growth in Asean-5 countries namely by Malaysia, Indonesia, Thailand, Singapore and Philippines. This study utilized a cointegration and variance decomposition analysis. Based on empirical evidence, they concluded that there are existences of long run relationship between government spending, revenue (tax and non tax) and economic growth for all ASEAN-5 countries. The result of variance decomposition also shows that public expenditure plays no role to stimulate economic growth in Malaysia, Thailand, Singapore, and Philippines, except for Indonesia.

Hsiao, Liu, and C. Cheung (2010) investigate the effectiveness of fiscal policy in Association of Southeast Asian Nations (ASEAN) of Indonesia, Malaysia, the Philippines, Singapore and Thailand. Through a structural vector autoregression (VAR) model, government spending is found to have weak and largely insignificant impact on output, while taxes are found to have outcomes contrary to conventional theory. Extensions using a time-varying VAR model reveal the impact of taxes on output mainly reflect heightened concerns over public finances amid the Asian financial crisis and the recent global financial crisis. On the other hand, for Singapore and Thailand, there is evidence that government spending can at times be useful as a tool for countercyclical policy.

On the basis of this literature, I would to design a model that is suitable for ASEAN economies to evaluate the impact of fiscal policy and find out the optimal government size.

There is some research relate to fiscal policy and economic growth for ASEAN countries, there is no research using endogenous growth model for analyzing these issues. Therefore, my own contribution is to provide new evidence of the impact of fiscal policy on economic performance in the endogenous growth model.

3. The fiscal policy of ASEAN countries

3.1. ASEAN countries and growth performance

The Association of Southeast Asian Nations, or ASEAN, was established on 8 August 1967 in Bangkok, Thailand, with the signing of the [ASEAN Declaration](#) (Bangkok Declaration) by the Founding Fathers of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand.

Brunei Darussalam then joined on 7 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999, making up what is today the ten Member States of ASEAN.

As set out in the ASEAN Declaration, the aims and purposes of ASEAN are:

To accelerate the economic growth, social progress and cultural development in the region through joint endeavours in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian Nations;

To promote regional peace and stability through abiding respect for justice and the rule of law in the relationship among countries of the region and adherence to the principles of the United Nations Charter;

To promote active collaboration and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields;

To provide assistance to each other in the form of training and research facilities in the educational, professional, technical and administrative spheres;

To collaborate more effectively for the greater utilisation of their agriculture and industries, the expansion of their trade, including the study of the problems of international commodity trade, the improvement of their transportation and communications facilities and the raising of the living standards of their peoples;

To promote Southeast Asian studies; and to maintain close and beneficial cooperation with existing international and regional organisations with similar aims and purposes, and explore all avenues for even closer cooperation among themselves.

Table 1: ASEAN economy in 2009

Population:		591.8	Million
GDP:	US\$	1,492	Billion
Trade:	US\$	1,536	billion*
FDI:	US\$	60	billion**
Employment:		276	Million

The formation of ASEAN can be attributed to geographical proximity and regional economic and political co-operation among its member countries. The ASEAN region has a total area of 4.5 million square kilometers. In 2009, the ASEAN economy reached 1492 Billion of GDP and 591.8 million of population. The diversity of the region is apparent in the fact that the two largest countries in terms of land area, namely Indonesia and Myanmar, are, respectively, 2700 and 970 times larger than the smallest country (Singapore) while the two countries with the largest population, namely Indonesia and the Philippines have, respectively, 570 and 220 times more people than the smallest country (Brunei Darussalam). All the major religions are present in the region: Buddhism, Christianity, Hinduism, and Islam. ASEAN countries have various forms of government ranging from monarchy to presidential and parliamentary. The people in the region speak different languages and a great multitude of dialects.

Table 2: Land and population of ASEAN countries 2007

Country	Land (1000 km ²)	Population (million) 2007
---------	---------------------------------	------------------------------

Brunei Darussalam	5.8	0.396
Cambodia	181	14.5
Indonesia	1,891	225
Lao PDR	237	5.61
Malaysia	330	27.2
Myanmar	677	58.6
Philippines	300	88.9
Singapore	0.7	4.59
Thailand	513	65.7
Vietnam	329	85.2
ASEAN	4,464	576

Sources: Asian Development Bank

During the past 30 years, the ASEAN countries have also differed considerably in the level of economic development. Each countries has experienced substantial industrial diversification and economic growth due to the adoption of export oriented trade policy and a rapid flow of investment.

By 2015 a single market and production base is to be established by the ten economies of the Association of Southeast Asian Nations (ASEAN). This is the vision of the ASEAN Economic Community (AEC), which is to create a highly competitive single market that promotes equitable economic development for Member States, as well as facilitating their integration with the global community. To achieve this target, ASEAN adopted the AEC Blueprint (www.asean.org/5187-10.pdf) in November 2007 which outlines the measures to be taken and the schedule for implementation. The entry into force of the ASEAN Charter and the adoption of an integrated Roadmap for an ASEAN Community 2015, have provided further impetus towards attaining this goal.

The ASEAN countries will be divided into three groups. First, the advanced ASEAN economies (AAEs) with per capita income of around \$10,000 or more at present, i.e. Brunie, Singapore, Malaysia. Second, the market economies of South East Asia with per capita incomes of less than \$5,000 are Indonesia, Philippines, Thailand. Next, there are the transitional economies of South

East Asia, i.e., Cambodia, Lao PDR, Myanmar, and Vietnam, which have per capita incomes of under \$1,500, but which are all growing quite rapidly at present.

The GDP per capita indicator for ASEAN countries is shown in table 3, among the ASEAN countries Singapore is smallest in term of population and area, but has highest GDP per capital. Cambodia, Lao and Vietnam have lowest GDP per capital. The richest country has a GDP per capita that is 160 times the poorest country. In terms of volume of trade, Singapore's total trade volume is 560 times that of Lao PDR and 75 times that of Cambodia. Seven ASEAN countries are net exporters while three (Lao PDR, Philippines and Vietnam) are net importers.

Table 3: GDP per capita of ASEAN countries (USA)

Years	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam	World
1980	26037		517		1803	689	4913	681		2481
1985	16086		520	649	2016	569	6960	743	239	2574
1990	13964		621	206	2418	719	11845	1495	98	4158
1995	16346	308	1014	368	4287	1070	22922	2817	288	5225
2000	18350	294	773	326	4006	1048	23815	1943	402	5303
2005	26248	471	1258	472	5286	1205	28953	2644	642	7070
2010		795	2946	1177	8373	2140	41122	4608	1224	9228

Source: World Bank

Data for 2010 shows that the richest country has a GDP per capita is 52 times the poorest country. Singapore's GDP per capita volume is 52 times that of Lao PDR and 34 and times that of Cambodia and Vietnam. Singapore has 41122 USD of GDP per capita in 2010, meanwhile GDP per capita of Vietnam, Cambodia, Lao PR are 1224 \$, 795 \$ and 1176 \$ respectively. Clearly, most of ASEAN countries have GDP per capita lower than that of World except Brunei

and Singapore. Malaysia nearly reached the average world of GDP in 2010 (8372 \$ compare with 9227 \$)

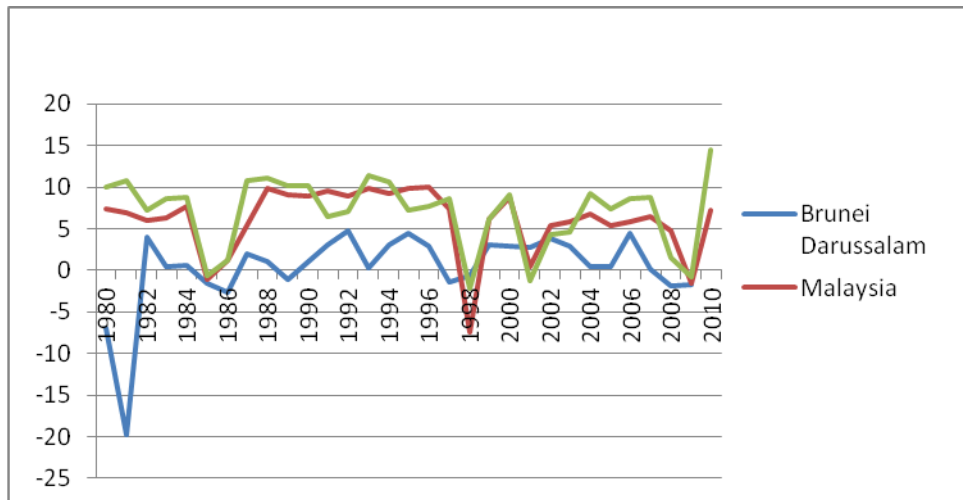
Table 4: Growth rate of GDP in ASEAN countries, 1980-2010 (%)

Years	Brunei Darussalam	Cambo dia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1980	-7.00		8.72		7.44	7.94	5.15	10.05	5.17	
1985	-1.49		3.48	5.07	-1.12	2.85	-7.31	-0.65	4.65	3.81
1990	1.09		9.00	6.70	9.01	2.82	3.04	10.11	11.17	5.10
1995	4.48	6.44	8.40	7.03	9.83	6.95	4.68	7.28	9.24	9.54
1997	-1.47	5.62	4.70	6.87	7.32	5.65	5.19	8.55	-1.37	8.15
1998	-0.56	5.01	-13.13	3.97	-7.36	5.87	-0.58	-2.11	-10.51	5.76
2000	2.85	8.77	4.92	5.79	8.86	13.75	4.41	9.07	4.75	6.79
2005	0.39	13.25	5.69	7.10	5.33	13.49	4.78	7.38	4.60	8.44
2010		5.96	6.10	9.44	7.19	10.42	7.63	14.47	7.81	6.78

Source: World Bank

Since 1980s, ASEAN has followed the path of its North-East Asian counterparts, embarking on the export-led, foreign investment-driven growth strategies. In the reform of economic strategies, the ASEAN growth rate accelerated during period 1980-20010, except the financial crisis period 1998-1999.

Figure 3: Growth rate of ASEAN-3 countries, 1980-2010 (USD)



Source: World Bank

Figure 3 indicate the acceleration of the economic growth of the ASEAN, from 1980 to 2010, ASEAN economies grew at average annual rate 5.5-10 percent, but it was only 3.2 percent for the except period 1997-1998 (the Asian financial crisis stage). In general, the growth rate are high and stable during 1980-2010. Even though, the global economy experienced great recession in 2008-2009, the economic growth still keeps high score in some countries such as Myanmar, Vietnam, Indonesia and Cambodia. Although the CLMV (Cambodia, Lao PDR, Myanmar, Vietnam) economies have on average grown faster than the ASEAN-6 countries during the past 30 years (5.7% compared to minus 8.8% in 1998 and 8.2% compared to 5.1% during 1980-2010 period), their share in total GDP is only about \$120 billion or a mere 7% of the nearly \$1.8 trillion total ASEAN gross domestic product in 2010.

Figure 4: Growth rate of ASEAN-4 countries, 1980-2010 (%)



Source: World bank, World Development Indicator, 2010

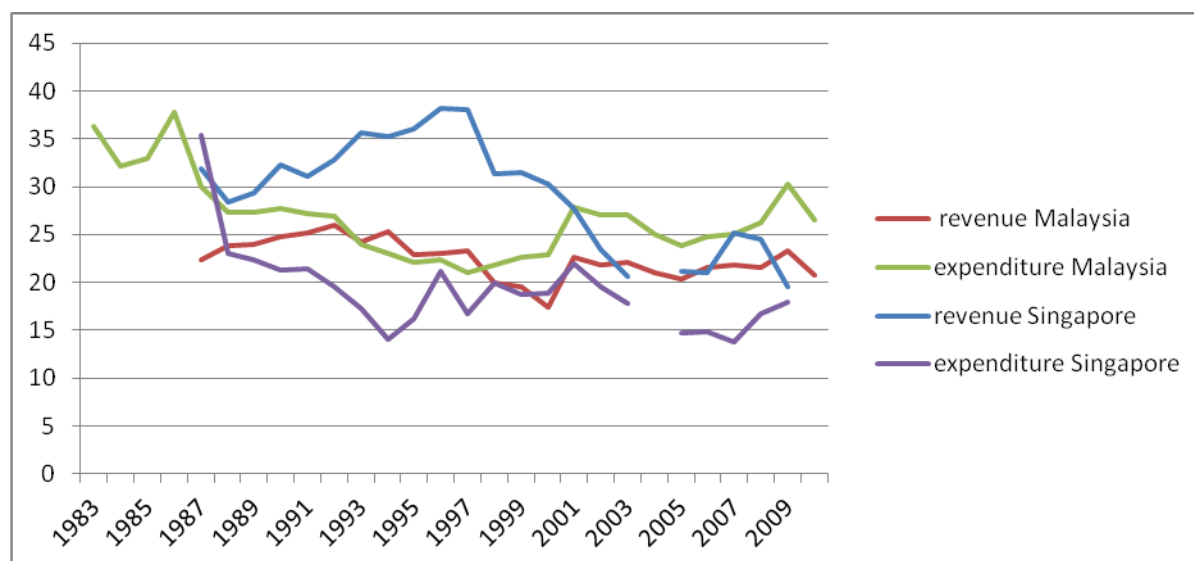
3.2. A review fiscal policies of ASEAN countries

3.2.1 Government expenditure policy

Public sector size varies within the ASEAN whose combined GDP now exceeds \$US 500 million for a population over 591 million. The accompanying charts compare average revenue and expenditure shares of ASEAN central governments relative to GDP during 1993-2010. Interestingly, revenue to GDP ratios fell in all economies after crisis of 1997-1998, due in part to falls in customs revenue as international trade was progressively liberalised throughout the region. In two economies Singapore and Malaysia which have higher GDP per capita than other, also have high public revenue during the period 1983-2010. The average of public revenue shares of Singapore is 29.3% of GDP and higher than that of the world which is around 25% in recent years. Mean while this indicator of Malaysia is 22.4% of GDP.

On the other side of the public accounts, central government expenditure as a share of GDP significantly increased across the region after economic crisis in 1997-1998. The crisis had a strongly impact on public expenditure in Singapore and Malaysia. Public expenditure tends to increase after each economic crisis in 1997-1998 and 2008-2009.

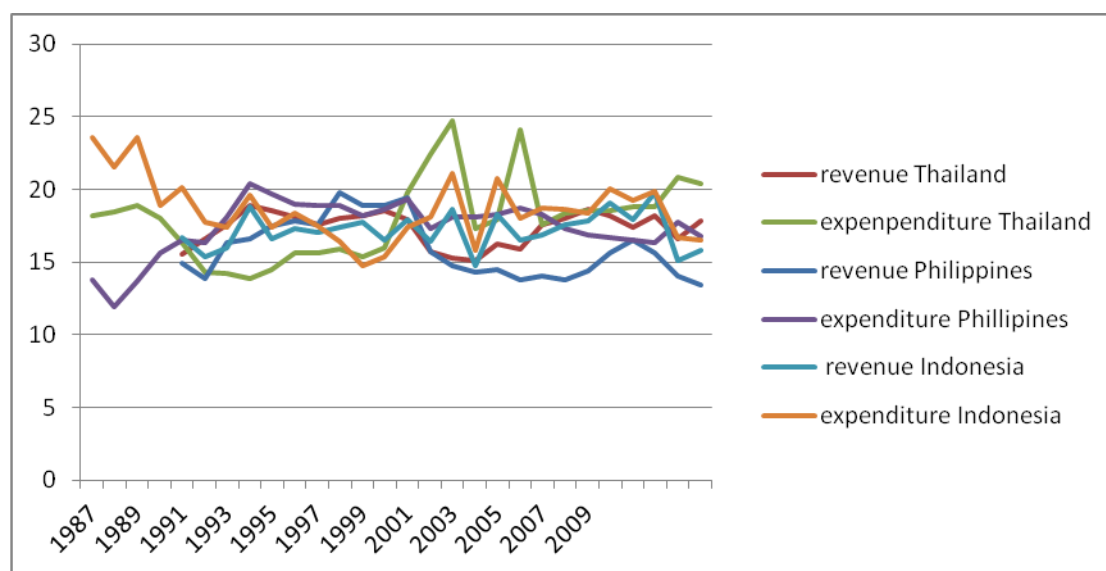
Figure 5: *Revenue and Expenditure Shares 1993-2010 in ASEAN countries, Malaysia and Singapore*



For Indonesia, the Philippines and Thailand, consolidated central government revenue is under twenty per cent of respective GDP's with Malaysia's revenue share being somewhat higher. These countries have the same level of both revenue share and expenditure share. During the period 1980-2010, the average of revenue/GDP ratios of three countries are around 15-18%.

Clearly, central government expenditure as a share of GDP fluctuated during the period across the region and tend to increase in crisis period, although relatively less so in the Philippines, the economy least affected by the Asian crisis. In the Philippines however, the change in the public spending to GDP ratio masks a rise in current expenditure offset by a relative fall in capital expenditure. Most notably, since 2000 Malaysia and the Philippines have persistently posted deficits between four to six per cent of GDP.

Figure 6: *Revenue and Expenditure Shares 1993-2010 in ASEAN countries, Thailand, Philippines and Indonesia*



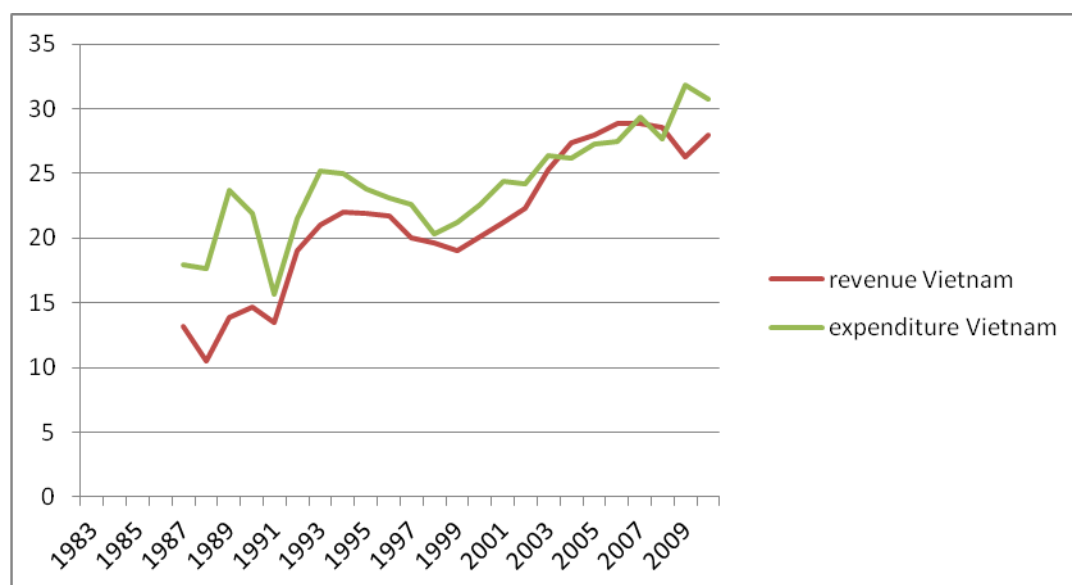
Sources: Asian Development Bank

For Vietnam, During the period under review, strong economic growth was accompanied by strong growth in government revenues. In nominal terms, government revenue and grants increased by an average of over 14 percent per year between 1998 and 2003. As a percentage of GDP revenue and grants rose from around 20 percent of GDP in 1998 to over 23 percent in 2003. The increase in revenues from consumption of petroleum products and production of crude oil from 4.1 percent of GDP in 1998 to 6.5 percent in 2003 explains the largest part of the revenue increase. The share of such revenues in total revenue and grants rose from 20 percent in 1998 to 22.4 percent in 2003. As a consequence, the public budget has become more vulnerable to oil price shocks. Furthermore, although the oil production outlook for the years ahead appears to be quite robust, crude oil exports cannot be relied upon as a source of revenues in the very long term.

To strengthen revenues as well as to encourage domestic and foreign investment, the State has lightened the tax burden through reduction of tax rates in many areas. Enterprise income tax rate has been reduced from 32 percent to 28 percent; the number of VAT tax rates has been cut from 4 to 3, including the abolishing of the highest rate of 20 percent. The National Assembly has decided to eliminate overseas profit remittance tax and surtax on enterprise income. Most notably, in 2002, agricultural land use tax has been reduced by 50 percent; and

since 2003 nearly all farmers are exempted from such tax: now approximately 75 percent of Vietnam's population pay no direct taxes.

Figure 7: Revenue and Expenditure Shares 1993-2010 of Vietnam



The year 1999 marked a turning point in the size of overall government spending. After steadily declining as a ratio of GDP in the years preceding, government spending (excluding on-lending, carry-over, and expenditure from retained revenue) has recovered during the period 1999–2003. From a low of 20.5 percent of GDP in 1999, it reached 22.6 percent of GDP in 2000, 24.2 percent in 2001 and 24.1 percent in 2002 (Figure 2.3). By 2003, this ratio was boosted to over 25 per cent. Between 1998 and 2003, total government spending rose at the remarkable average annual rate of 16 percent in nominal terms, with capital expenditure growing at some 20 percent. As a share of GDP, current expenditure rose from 14.7 percent in 1998 to 16.8 percent in 2003, while capital expenditure rose from 5.7 percent to 8.3 percent over the same period. Capital expenditure has averaged 34 percent of total expenditure over the last three years.

Table 5: Taxes Shares in ASEAN countries, 1993-2010

T	Indonesia	Malaysia	Thailand	Myanmar	Philippines	Singapore	Vietnam	high income	World
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1983	17.93	21.67	14.01	9.24	10.8	22.52			
1984	16.93	20.71	13.79	8.58	9.56	26.15			
1985	18.31	21.56	13.72	8.26	10.71	27.18			
1986	13.62	20.51	13.61	7.41	10.76	29.41			
1987	15.08	15.38	14.29	6.37	16.52	35.3	17.94		
1988	14.32	15.92	15.5	4.49	16.35	23.03	17.57		
1989	14.86	15.84	16.27	4.26	18.14	22.33	23.75		
1990	17.75	17.84	17.66	6.2	20.4	21.27	21.89		
1991	15.64	19.12	17.04	5.61	19.68	21.4	15.75		
1992	16.08	19.09	16.13	5.04	18.98	19.52	21.45		
1993	14.9	18.5	15.8	4.7	15.6	17.34	19.9		
1994	15.2	19.2	16.2	4.3	16	13.96	20.1		
1995	16	18.7	16.5	3.7	16.3	16.17	19.1		
1996	10.8	18.6	16.7	4	16.9	21.11	19.2		
1997	11.3	19	15.9	4.4	17	16.77	17.7		
1998	10.7	16	13.9	3.5	14.1	20.01	16.5		
1999	10.3	15.1	13.2	2.3	13.3	18.77	16.7		
2000	8.3	13.2	13.2	2	12.8	18.87	18		
2001	11.3	17.4	13.4		12.7	22	19.1	16.36	15.52
2002	11.6	17.4	14		12.1	19.56	19.8	15.07	14.47
2003	12	15.5	15.2		12.1	17.79	20.9	15.07	14.51
2004	12.2	15.2	15.8		11.8		21.7	15.31	14.70
2005	12.5	15.4	16.4		12.4	11.8	22.8	15.98	15.35
2006	12.3	15.1	16.2		13.7	12.1	24.3	15.84	15.42
2007	12.4	14.8	15.5		13.5	13.1	23.5	16.08	15.61
2008	13.3	15.2	16.1		13.6	14.1	24.4	15.18	14.89
2009	11.1	15.7	14.6		12.2	13.7	22.3	13.53	13.68
2010	11.6	14.3	15.5		12.1		24.3		

Sources: Asian Development Bank

The tax regime varies among ASEAN countries. For example, corporate tax in Indonesia is applied with three levels 10%, 20%, 30% and depends on the revenue. Malaysia and Singapore, The corporate income tax is 28% and 26% respectively. Corporate Income Tax in Thailand and Philippines are more than 30% of net profits. There is no Value Added Tax in Malaysia, meanwhile the tax in Thailand, Indonesia, Philippines is 10 %, and from 1 January 1999 VAT shall be applied at the rates from 0% to 20% in Vietnam, depending on types of goods or services. Commercial Tax is payable on goods, imported or produced in Myanmar, trading sales, and services ranging from 0%-200%.

There are differences in tax regimes among ASEAN countries. However, the tax/GDP ratio is around the ratio of world about 15% in recent year in most of these countries, except Vietnam which have higher tax share in GDP.

For Singapore, there are three main sources of government operating revenue, namely tax revenue, fees and charges and other receipts. Tax revenue accounts for 91% of the government operating revenue for the financial year 2010/11. The most significant is tax revenue from the various taxes imposed by the government.

Table 6: Government Expenditure on Social Security and Welfare in ASEAN countries

Year	Brunei Darussalam ^c	Cambodia	Malaysia	Philippines	Singapore	Thailand	Australia	Japan
1990	1.1	...	1.2	0.2	0.4	0.5	...	7.4
1995	1.3	0.4	0.8	0.4	0.8	0.5	...	9.2
2000	1.2	0.2	0.9	0.7	0.7	1.0	8.6	10.7
2001	1.0	0.2	1.3	0.9	2.7	2.2	9.4	11.2
2002	1.0	0.2	1.3	0.9	0.8	1.5	9.1	11.7
2003	1.2	0.2	1.5	0.9	0.4	1.8	8.9	11.8
2004	0.8	0.2	1.0	0.9	0.5	2.0	9.3	11.8
2005		0.4	0.9	0.8	0.3	1.4	9.0	12.0
2006		0.4	1.0	0.8	1.2	1.4	8.6	12.1
2007		0.4	1.1	0.8	0.6	1.5	8.4	12.2
2008		0.4	1.1	0.9	2.0	1.4	8.3	12.9
2009		0.5	1.2	0.9	2.2	1.9	10.0	14.7
2010		0.5	1.3	1.2	...	1.5	8.5	...

Source: World Bank

Poverty alleviation is also an important goal for the ASEAN. Social spending needs are high given a large share of the population living below poverty levels, especially in Cambodia, Lao, Vietnam, Thailand, Indonesia and Philippines. Public social expenditure is relatively low in these economies and access to social services by the most vulnerable remains a challenge. In general, public spending on social safety nets and welfare is lower in most of Asia compared to the rest of the world especially Australia and Japan. Table 6 shows that ASEAN countries only used about

1% of GDP for social expenditure in 1990-2010. Meanwhile, other countries in Asia and Pacific such as Australia and Japan have the average share social expenditure of GDP about 10% during this period.

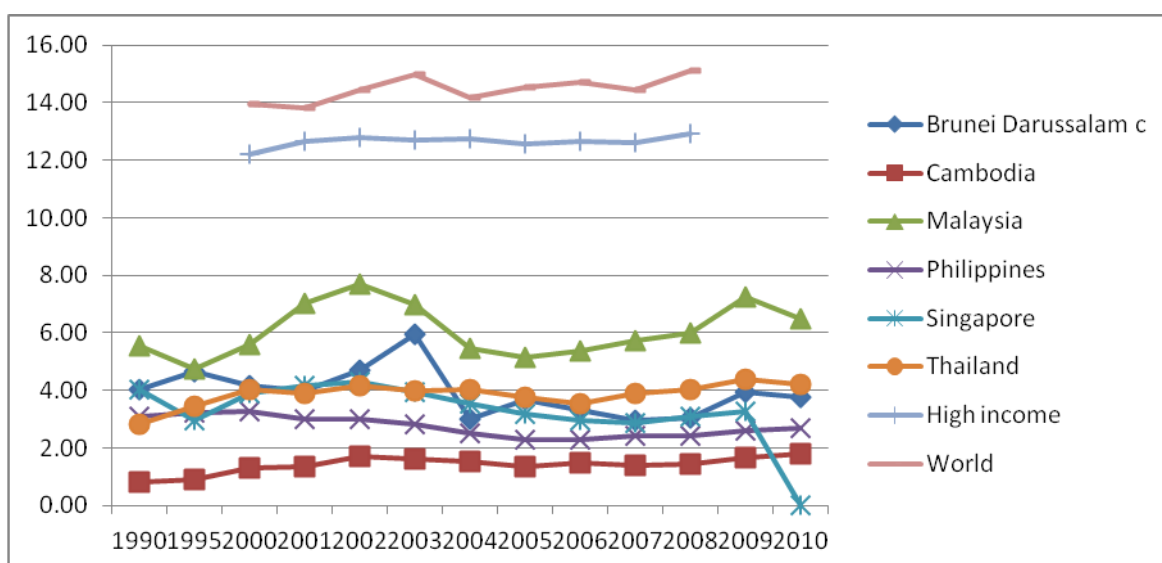
Table 7: Government Expenditure on health in ASEAN countries

Year	Brunei Darussala m	Cambodi a	Malaysi a	Philippine s	Singapor e	Thailan d	High incom e	World
1990	1.6	1.5	1.5	0.7	0.9	0.9		
1995	2.3	0.3	1.2	0.4	1.2	1.2	9.59	8.82
2000	2.1	0.9	1.5	0.4	0.9	1.3	10.12	9.23
2001	2.0	0.8	1.8	0.3	1.2	1.3	10.63	9.66
2002	2.0	1.0	1.7	0.3	1.0	1.6	11.02	9.97
2003	2.5	0.9	2.1	0.3	1.4	1.6	10.97	9.93
2004	1.3	0.9	2.0	0.3	0.9	1.6	10.89	9.79
2005	1.7	0.9	1.7	0.2	0.9	1.4	10.92	9.73
2006	1.5	0.9	1.7	0.3	0.8	1.4	10.94	9.62
2007	1.4	1.0	1.8	0.3	0.8	1.6	10.89	9.45
2008	1.4	1.0	1.8	0.2	1.0	1.9	11.01	9.40
2009	2.1	1.2	2.1	0.3	1.4	2.0	11.84	10.03
2010	1.9	1.3	2.2	0.4	...	2.0		

Source: Asian Development Bank

Public health spending in the ASEAN, accounted for 1.3 percent of GDP in 1990-2010, lagged far behind many high income economies and world which averaged 10.8 and 9.6 percent of GDP respectively. Similarly, social expenditure, which includes spending on labour market programs, social insurance, social assistance, micro-area based programs and child protection averaged 2.7 percent of GDP in Indonesia, Malaysia and the Philippines in 2004–05, compared to 5.1 percent of GDP in Asia and 30 percent of GDP in the OECD countries.

Figure 8: Government Expenditure on education in ASEAN countries



Sources: ADB, World Bank

Increasing public spending on health and education could foster a welcome increase in private consumption by reducing the need to self-insure to finance future expenditures. This will also result in higher human capital investment, thus increasing long term growth potential. A simulation using household data in China suggests that a sustained 1 percent of GDP increase in public expenditures, distributed equally across education, health, and pensions, would increase permanently the household consumption ratio by 1¼ percentage points of GDP (Baldacci and others, 2010). Figure 7 indicates that the gap of public expenditure on education (percentage of GDP) between ASEAN countries and high income countries and the average ratios of world is so too wide. The average of the ratio in ASEAN countries is 4% of GDP, meanwhile this ratio in high income countries is 12% and the world average is 14.5%

Looking ahead, some ASEAN countries will be facing significant fiscal pressures from the adverse demographic trends. In emerging ASEAN and other Asian economies, spending on pensions and health care is relatively modest today, reflecting the relatively young population structure. For example, in the Philippines, Indonesia and Thailand, spending on pensions and health is less than 2.5 percent of GDP. However, by 2050, this spending is projected to nearly double, given increasing old age dependency ratios (IMF, 2010). Furthermore, the need to expand coverage to wider sections of the population is likely to result in even larger increases in spending over the next few decades. In these countries, preserving fiscal space would require that

the expansion of pension and health coverage be done in a fiscally sustainable manner. Finally, in countries where demographic pressures are more severe, such as Malaysia and Singapore, age-related spending is expected to rise much more rapidly: for example, in Malaysia, pension and health spending is expected to increase by 4.5 percent of GDP over 2010–50.

Fiscal balance in ASEAN countries

Public debt to GDP ratios vary among members of ASEAN countries and is well higher than World average public debt to GDP ratio during 1990-20010, Singapore has highest the ratio with average of 88% in the period (table 8). Philippines and Myanmar have average government debt about 50% of GDP and approximate equal the level public debt of high income countries in the period.

Table 8: Government debt in ASEAN countries (percent of GDP), 1991-2010

Year	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	World Average
1990				79.5		54.4	71.1			7.53
1991				72.2		52.6	74.1			8.55
1992				63.4		63.0	76.4			8.96
1993				54.9		74.9	69.0			5.02
1994				46.9		62.4	68.2			6.12
1995				41.0		59.6	68.1			7.94
1996	30.3			35.2		51.7	69.6	15.2		7.44
1997	32.0			31.8		54.3	68.9	40.5		7.93
1998	37.5			36.1	110.1	54.7	82.4	49.9		12.43
1999	34.8			36.9	89.9	57.1	84.9	56.6		13.94
2000	35.4	95.1		35.3	109.2	62.1	81.2	57.8		21.21
2001	34.9	80.2	111.5	41.4	140.9	62.8	95.4	57.5	31.7	24.06
2002	40.1	67.8	112.1	43.1	107.3	66.5	95.5	55.1	32.5	25.28
2003	43.6	60.5	106.1	45.1	88.7	71.4	98.7	50.7	33.3	25.21
2004	42.6	55.8	92.9	45.7	84.9	69.7	96.1	49.5	42.3	23.27
2005	37.1	46.3	83.8	44.4	81.2	62.8	93.4	47.3	41.2	21.61
2006	33.2	40.4	71.4	43.2	68.8	55.4	86.8	42.0	41.8	18.05
2007	30.7	36.9	63.3	42.7	49.6	47.8	85.9	38.3	44.6	15.77
2008	25.3	33.2	60.0	42.8	42.4	48.7	97.2	37.3	42.9	15.69
2009	28.7	28.6	62.1	55.4	44.5	49.2	105.0	45.2	51.2	17.58
2010	30.3	26.9	60.5	54.2	43.0	47.3	97.2	44.1	52.8	18.32

2011	30.4	25.4	57.6	55.1	46.0	47.0	93.7	43.7	51.5	19.48
2012	30.1	24.0	54.9	55.8	47.9	46.0	91.3	44.0	51.0	19.54
2013	29.0	22.8	53.0	56.5	48.8	44.3	88.5	43.9	50.1	19.38
2014	29.1	21.8	51.2	56.9	49.2	42.8	86.1	43.8	49.1	19.04
2015	28.2	21.1	49.0	57.2	44.7	41.4	83.9	43.5	47.9	18.63
2016	27.2	19.9	45.8	57.3	44.2	40.1	82.9	43.0	46.7	18.22

Sources: World bank and Economy Watch website

A unique characteristic of the ASEAN economies most badly damaged by the Asian financial crisis of 1997-98 (Indonesia, the Philippines, Malaysia and Thailand — the ASEAN-4) was that fiscal policies and public debt levels had been relatively sound leading up to the crisis (see, among others, Makin, 2005 and Eichengreen, 2002). The crisis public debt stocks of ASEAN members reflected historically different economic and financial experiences. For instance, the macroeconomic impact of the 1997-98 currency crisis was relatively small for the Philippines from which it emerged without the severe recessions that occurred elsewhere in the region. Yet the Philippines entered that crisis with the legacy of already high public debt stemming from an earlier serious fiscally induced crisis in 1985-86. Indonesia also experienced a potentially serious debt crisis in the mid-1980's when oil prices slumped. It weathered that period quite effectively but finished it with a high debt level (Tony Makin, 2005)

Post-Asian crisis public debt levels grew strongly in the ASEAN-4 for numerous reasons. First, the massive currency depreciations during the crisis itself substantially raised the domestic currency value of foreign currency denominated debt. Second, governments deployed fiscal policy as a post-crisis countercyclical measure to boost domestic demand in the context of a global economic slowdown. However, the expansionary response across the region was tempered somewhat by IMF programs and the innate conservatism of ASEAN-4 finance ministers. Third, accelerated domestic financial liberalisation facilitated issuance of public debt instruments in home markets over this time (IMF, 2003b). Finally, there was very significant 'socialisation' of private debt. In particular, when ASEAN-4 financial systems experienced balance sheet distress after their currencies collapsed, there was substantial recapitalisation of commercial banks, the fiscal cost of which was either recorded explicitly in the budget accounts

or recorded off-budget through the quasi-fiscal activities of central banks or other government agencies.

In a debt sustainability study on the ASEAN countries minus Singapore by Makin (2005), the Philippines and Indonesia, in particular, are found to require the accumulation of larger primary balances in order to lower public debt to more prudent levels to avoid a potential crisis. Makin uses data up to 2003, which since then has seen improved fiscal position in Changing Impact of Fiscal Policy on selected ASEAN Countries Indonesia, but a weakened position in Malaysia. Still, as late as 1999, Indonesia defaulted on and restructured its debt, and the same happened to the Philippines much earlier in 1983. Philippines's public debt to GDP ratio is among the highest, and it has hovered around the 60–80% range since 1991, although it has improved somewhat in recent years (see table 8). Indonesia's position worsened amid the Asian financial crisis due to efforts by the government to tackle the problems emanating from the private sector and the failed banks. Thailand's only aberration was during the Asian financial crisis in an otherwise relatively low public debt environment. Malaysia took more than a decade to reduce its public debt ratio of over 100% since the twin-deficit crisis in the mid-1980s to less than 40%. Nevertheless, despite the good economic years before the global financial crisis, its ratio has stayed above 40%. Singapore's rising debt ratio throughout the 1990s, now reaching over 100%, looks worrying. In times of uncertainty, where early exit is at a premium and headline numbers grab attention, Singapore can be susceptible to the same contagion as other high debt countries.

Vietnam is a transition economy has maintained high rates of growth for several years. China and Vietnam in particular are two of the fastest growing economies in the world today. The country have also recorded remarkable success with their stabilization efforts in the past. However, their experience with underlying structural adjustments and new revenue sources to ensure fiscal balance has been mixed. As a consequence, the transition economies still run large budget deficits, from 2000-2010 the average of government debt is 41.4 % of GDP (table 8). However, unlike the economies of South Asia, Vietnam generally managed to avoid deficits on the current account. Borrowed funds have usually been used only to finance capital expenditure.

Table 9: Fiscal balance of ASEAN countries 1990-2010

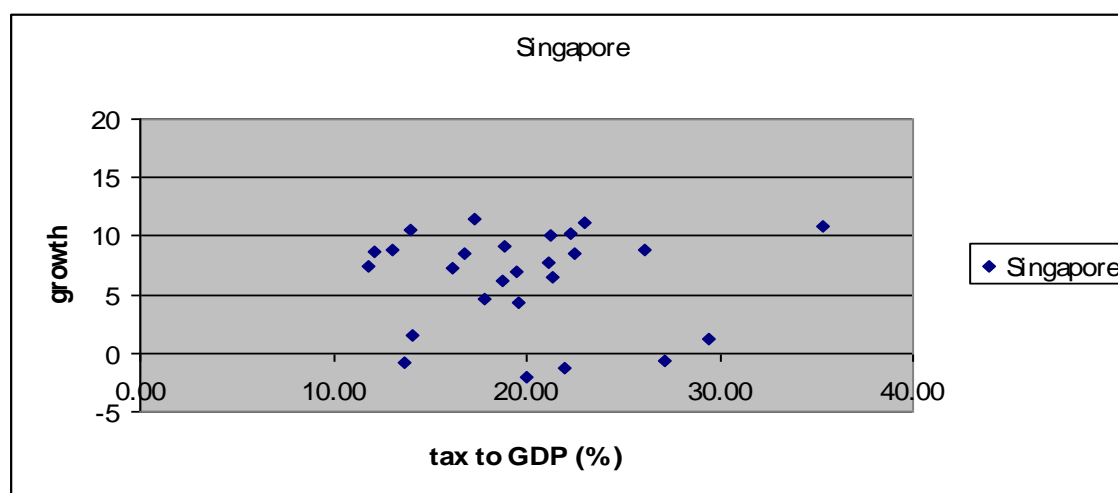
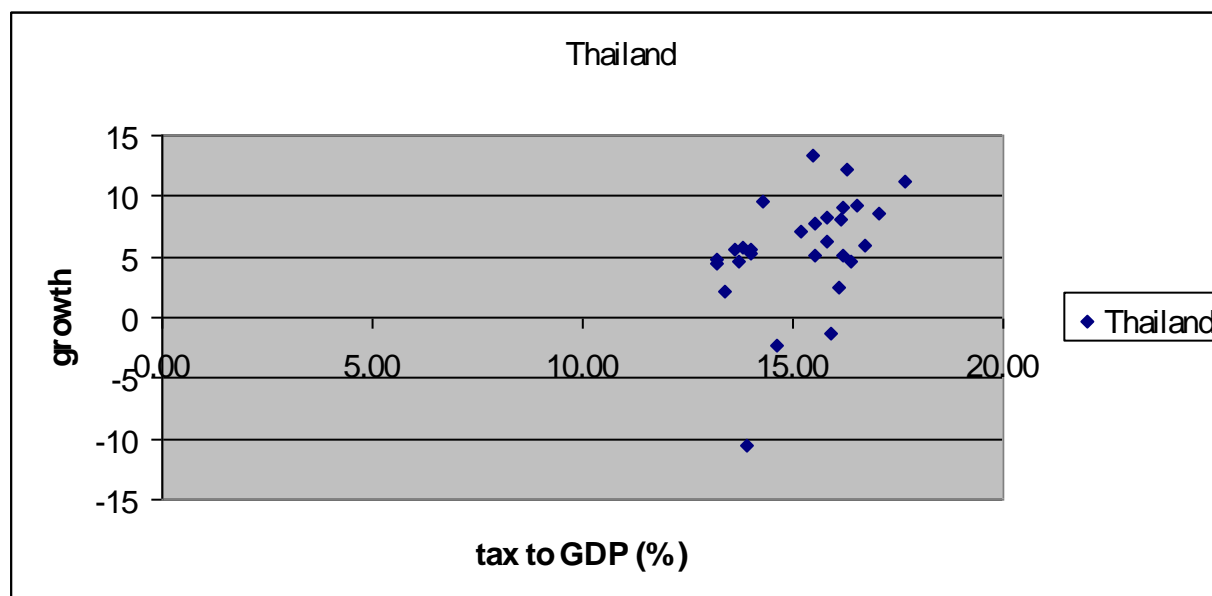
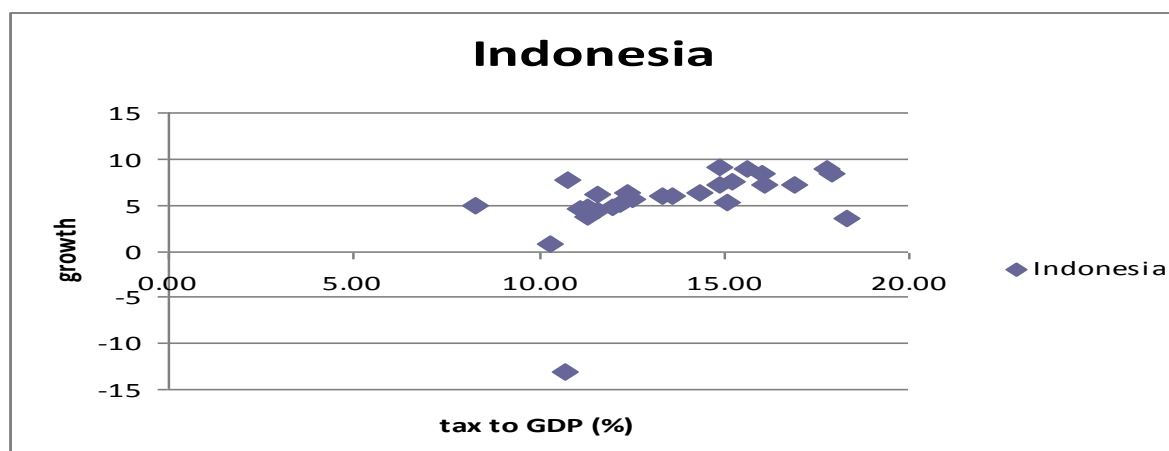
Years	Brunei	Cambodia	Indonesia	Lao	Malaysia	Philippines	Singapore	Thailand	Viet
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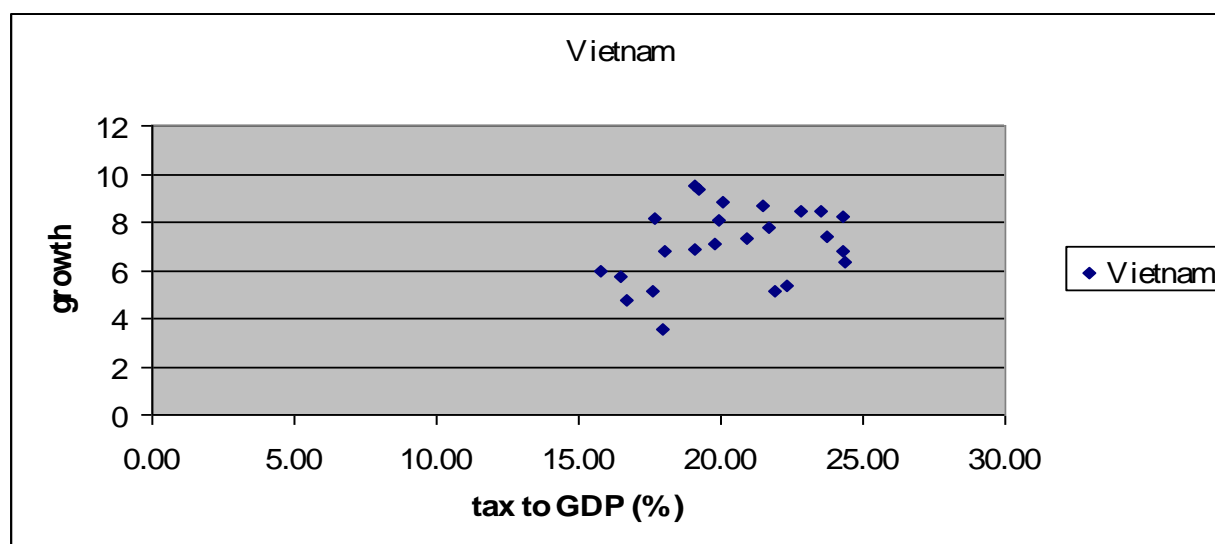
	Darussalam		PDR					Nam	
1990	-0.3	-4.5	-0.8	-9.7	-2.9	-3.5	10.2	4.7	-7.2
1995	15.1	-7.2	3.0	-12.9	0.8	0.6	14.0	2.6	-1.3
2000	10.9	-2.1	-1.1	-4.6	-5.5	-3.7	9.9	-2.8	-4.3
2001	0.4	-3.1	-2.5	-4.5	-5.2	-3.8	5.0	-2.7	-3.5
2002	-9.9	-3.2	-1.5	-3.4	-5.3	-5.0	4.7	-8.1	-2.3
2003	-1.5	-3.4	-1.7	-5.7	-5.0	-4.4	3.0	0.1	-2.2
2004	11.3	-1.6	-1.0	-2.6	-4.1	-3.7	3.9	-0.4	0.2
2005	21.1	-0.7	-0.5	-4.5	-3.6	-2.6	6.5	0.1	-1.1
2006	21.5	-0.2	-0.9	-3.1	-3.3	-1.0	6.3	-0.3	1.3
2007	21.9	-0.5	-1.3	-2.7	-3.2	-0.2	11.3	-1.3	-1.0
2008	27.9	-0.1	-0.1	-2.3	-4.8	-0.9	7.8	-0.6	0.7
2009	6.2	-6.3	-1.6	-3.4	-7.0	-3.7	1.7	-4.2	-6.6
2010	...	-4.8	-0.7	-2.3	-5.6	-3.5	...	-2.5	...

The relationship of economic growth and public finance

The relationship between tax revenue to GDP ratio and economic growth in some selected ASEAN countries is illustrated in Figure 8, 9 and 10. The horizontal axis in these figures show the tax to GDP ratio and the vertical axis presented the economic growth rate. In some countries, it seems that there is positive correlation between tax revenue to GDP ratio and economic growth such as Indonesia, Thailand, Singapore and Vietnam. In most cases, when these countries increase the tax/GDP ratio, their growth rate tends to be higher. The correlation coefficient between the two indicators is quite high in these countries except Philippines with negative correlation. The Indonesia's correlation coefficient is 0.405 and that of Thailand and Vietnam are 0.4 and 0.32 respectively. Malaysia and Singapore also have positive correlation coefficient (writer's calculation).

Figure 9: Tax revenue and economic growth in some selected ASEAN countries





Source: ADB, World Bank

In contrast, other side of public finance is expenditure government which has negative correlation with economic growth. The figure 9 and 10 illustrated this situation in some selected ASEAN countries such as Malaysia, Thailand. Myanmar and Indonesia also have the negative indicator. However, it is positive in Vietnam and Philippines.

Figure 9: the scater graph of government expenditure/GDP ratio and growth rate, Malaysia

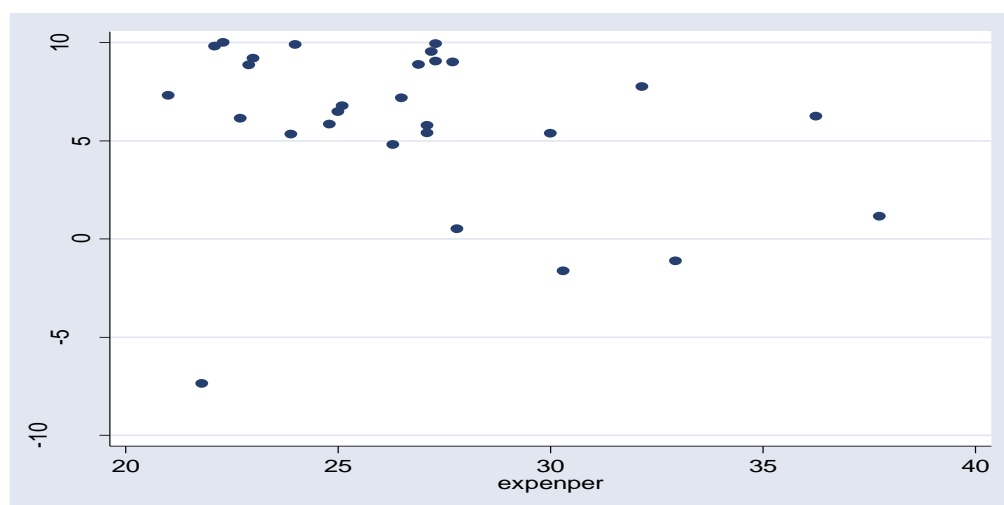
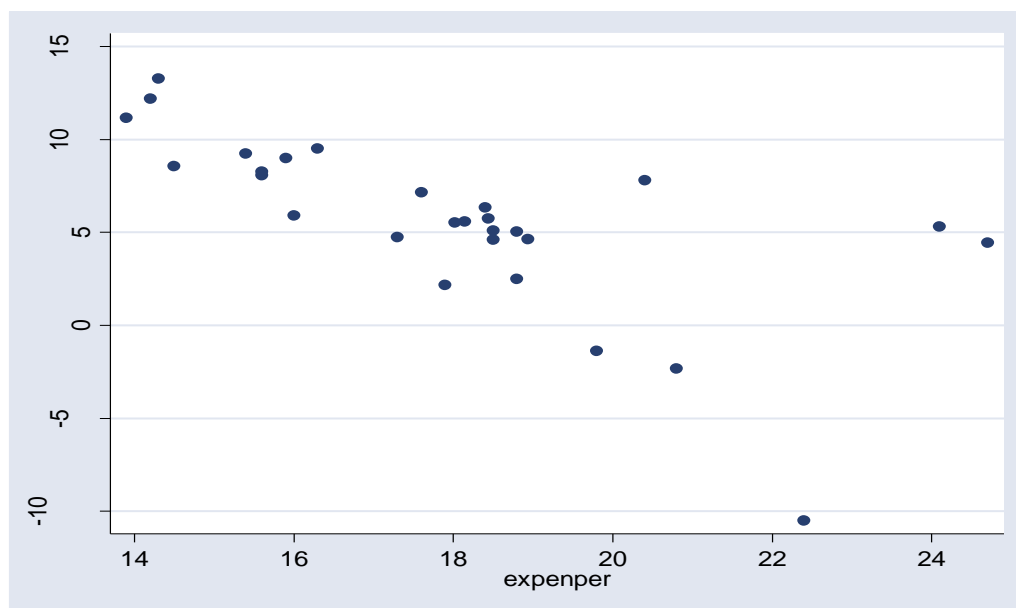


Figure 10: The scater graph of government expenditure/GDP ratio and growth rate, Thailand



3.2.2 ASEAN and Fiscal strength to continue recently

As concerns over European sovereign debt and the political battles over budget in the US, they continue to cause market volatility. It is worth noting that the countries that make up the ASEAN region are in comparatively good fiscal shape. Sound fiscal balances have allowed South East Asian countries to implement strong economic stimulus packages in response to the global financial crisis, helping them to quickly regain their growth momentum. The strong fiscal position in the ASEAN region has also meant that, at the height of the fiscal response to the global financial crisis in 2009, ASEAN fiscal balances only weakened by about 3% of GDP compared to precrisis levels. The ASEAN situation compares favourably to the steep rise in fiscal deficits seen in the advanced G20 nations, which hit an unprecedented average of 9.5% of GDP (J.P Morgan, 2010)

The IMF recently published a paper with recommendations on how ASEAN governments can avoid these troubles:

1. The introduction of better tax collection systems that can ensure long-term fiscal health
2. Increased efficiency of government projects and also an increase in the number of public-private partnership (PPP) projects

3. A reform of entitlement programmes aimed to increase spending power and boost the domestic consumer
4. Policies that increase transparency in government decision making, and thus increase accountability. This is especially important in Indonesia, Philippines and Thailand
5. Finally, on the spending side, investors should look for policies that could promote private infrastructure investment and private consumption in an attempt to replace public spending as the main driver of economic growth. Going forward these are key sectors for long-term investors in the region.

The strong fiscal position of the ASEAN region may lead to a long-term increase in consumer spending, which has remained low compared to respective global spending. Any pickup in consumer demand will have a positive impact on consumer-related stocks. In Singapore and Malaysia, where populations are aging at a rapid rate, increases in social security payments (particularly on healthcare and pensions) could spark increased consumer demand, as many people in both countries currently save a large amount of their disposable incomes to provide support in their old age. Meanwhile, fiscal strength allows governments in the Philippines, Indonesia and Thailand to focus on poverty alleviation. As of 2009, 45% of the population in the Philippines, 53.8% in Indonesia and 11.5% in Thailand live on less than USD 2 per day. If poverty alleviation policies are put in place, household consumption could increase very quickly as millions of new consumers enter the market. In fact, new IMF research related to China suggests that a 1% increase in education, health and pension expenditure permanently increases the household consumption ratio by at least 1.25 percentage points of GDP. In addition, investment in education, health and pensions is also an investment in human capital, which is a key to sustaining long-term economic development.

ASEAN's strong fiscal position has helped the region to outperform despite the financial crisis and its aftermath and continues to make the region a very attractive investment destination. However, the year 2011 will be a critical time for the region as countries withdraw their fiscal stimulus packages. Investors should carefully watch public policy decisions, because they will impact the long-term growth prospects of both the economies and markets of South East Asia. If

governments continue to implement sound policies, then we believe that ASEAN markets can continue to outperform, driven by strength particularly in the infrastructure and consumer goods sectors.

4. Empirical model of selected ASEAN countries

In this chapter, firstly I would build the growth model with fiscal policy for ASEAN selected countries, which base on the Barro and Devarajan model. Secondly, the chapter introduce data resources of the empirical model. The data were collected from WDI and ADB website. At the same time, I show summary of variables in the model and definition of them. Thirdly, I would show results of model and discussion how what the results say. Finally, Some policy implications is proposed from research results in the end of this chapter.

4.1 Building of growth model with fiscal policy for ASEAN countries

Neoclassical growth models imply that government policy can affect only the output level but not the growth rate. However, endogenous growth models incorporate channels through which fiscal policy can affect long-run growth (Barro, 1990).

The Barro models classify generally the fiscal policy instruments into: a) distortionary taxation, which weakens the incentives to invest in physical/human capital, hence reducing growth; b) non-distortionary taxation which does not affect the above incentives, therefore growth, due to the nature of the utility function assumed for the private agents; c) productive expenditures that influence positively the marginal product of private capital, henceforth boost growth; d) unproductive expenditures that do not affect the private marginal product of capital, consequently growth, but increase household utility directly (Nikos Benos, 2009, pp. 2-3)

The equation being estimated typically by the researchers who investigate the effect of fiscal policy on growth takes the form (Kneller, 1999):

$$G_{it} = a + \sum_{i=1}^k b_i E_{it} + \sum_{j=1}^l c_j F_{jt} + U_{it} \quad (*)$$

In (*), G_{it} is the growth rate of country i at time t , which is a function of non-fiscal variables, E_{it} , and fiscal variables, F_{jt} . Additionally, a and b_i represent the constant term and the slope coefficient of the non-fiscal variable i (there are k such variables) respectively.

Moreover, I will build the model basing on models of Barro (1990), Devarajan (1996) with the key component following:

Production sector

Production function is in form of the Cobb-Douglas production function which has constant returns to scale. The government have different component of expenditure and I assumm that each component have different impact on gross domestic product. This is as following (1.1)

$$y = f(k, g_1, \dots, g_n) = k^\alpha g_1^{\beta_1} g_2^{\beta_2} \dots g_n^{\beta_n} \quad (3.1)$$

Where $\alpha > 0$, $\beta_i > 0$, $\alpha + \sum_{i=1}^n \beta_i$ and k is capital of economy. Because I don't focus on analyzing the impact of different types of taxes on GDP, so I assume that Government uses a fixed tax rate τ , it such that there are fiscal balance

$$\begin{aligned} \tau y &= g = \sum_{i=1}^n g_i \\ g_i &= \phi_i \tau y \\ \sum_{i=1}^n \phi_i &= 1 \end{aligned} \quad (3.2)$$

Above g_i is government expenditure of i component. Then, ϕ_i is the share of component i in total government expenditure. From (3.1) and (3.2) equation, we have functions of gross product and share of expenditure component:

$$\frac{g}{k} = \left[\prod_{i=1}^n \phi_i^{\beta_i} \tau \right]^{1/\alpha} \quad (3.3)$$

$$y = \left[\prod_{i=1}^n \phi_i^{\beta_i} \tau^{1-\alpha} \right]^{1/\alpha} k$$

Household sector:

$$U = \int_0^\infty u(c) e^{-\rho t} dt \quad (3.4)$$

where c is consumption per person and $\rho > 0$ is the constant rate of time preference. Population, which corresponds to the number of workers and consumers, is constant.

The utility function:

$$u(c) = \frac{c^{1-\sigma} - 1}{1-\sigma} \quad (2) \quad (3.5)$$

The condition is that: $k = (1 - \tau)y - c$

Using Hamilton, we have solution from these equations above:

$$\gamma = \frac{1}{\sigma} \left[(1 - \tau) \left(\prod_{i=1}^n \phi_i^{\beta_i} \tau^{1-\alpha} \right) \right]^{1/\alpha} - \rho \quad (3.6)$$

Where $1/\sigma = -u'(c)/u''(c)$. The equation (3.6) illustrates the relationship between growth rate economic and share of government expenditure. From equation (3.6), we have:

$$\frac{\partial \gamma}{\partial \phi_j} = \frac{1}{\sigma \alpha} (1 - \tau) \left[\prod_{i=1}^n \phi_i^{\beta_i} \tau^{1-\alpha} \right]^{\frac{1-\alpha}{\alpha}} \prod_{i=1}^n \phi_i^{\beta_i} (\beta_j \phi_j^{-1} - \beta_s \phi_s^{-1})$$

Above equation imply that:

$$\frac{\partial \gamma}{\partial \phi_j} > 0 \quad \text{if} \quad \frac{\beta_j}{\phi_j} > \frac{\beta_s}{\phi_s}$$

This means that the growth rate not only depends on elastic coefficients β_j of each component of expenditure but also it depends on the initial share of these components ϕ_j .

The endogenous growth models predict that an increase in productive spending financed by non-distortionary taxes will increase growth, whilst the effect is ambiguous if distortionary taxation is used. In the latter case, there is a growth-maximizing level of productive expenditure, which may or may not be Pareto efficient (Irmén-Kuehnel, 2008). Also, an increase in non-productive spending financed by non-distortionary taxes will be neutral for growth, while if distortionary

taxes are used the impact on growth will be negative. However, because of the limitation of data the study only examine the impact of overall taxes on GDP in ASEAN countries.

Furthermore, I applied OLS and panel econometric techniques. OLS assumes that the error in each time period is uncorrelated with the explanatory variables in the same period. Panel data analysis offers several advantages over time series and cross-section techniques. It allows for more efficient parameter estimates, uncovers dynamic relations and identifies otherwise unidentified models.

4.2 Data resources

As above results, we have empirical model with list of variable might be the follows:

Fiscal variable	Non-fiscal variable
<ul style="list-style-type: none"> - Share of tax revenue in GDP - Share of government expenditure in GDP - Share of health public expenditure in total government expenditure - Share of government expenditure for education in total government expenditure - Share of government expenditure for economic services in total government expenditure 	<ul style="list-style-type: none"> - Inflation - Gross national saving - GDP per capita

Data for fiscal and non-fiscal variables was collected from the World Development Indicator (WDI) of World Bank and website of Asian Development Bank (ADB) from 1983 through 2010.

The dependent variable is *growth rate of economics*. The *growth* variable is collected from World Development Indicator (WDI). Annual percentage growth rate of GDP at market prices was based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without

making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

Independent variables

The Non-fiscal variables included GDP per capita, inflation, gross national saving, all of them were also gather from World Development Indicator. The model use logarit of GDP per capita (*loggdpcap*), share of gross national saving in GDP (*savingper*), and *inflation* as independent variables.

GDP per capita is gross domestic product divided by mid-year population. *Inflation* as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

The key fiscal variables are *tax* and *expenditure*, the ratio of all central government taxes, fees, and expenditure, revenues. All fiscal variables are collected from the key indicator of Asian and pacific countries belong to ADB.

Expenditure is cash payments for operating activities of the government in providing goods and services. They include compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends. In the model, I use the *government expenditure /GDP ratio (expenper)* as a independent variable which is expect to affect on the economic growth.

Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. *Tax revenue to GDP ratio (taxper)* is considered as a factor effect on GDP growth.

Government spending in terms of functional expenditure data is available in key indicator of ADB including general public service, defense, education, health, social security and welfare, housing and community amenities, economic services, others. The econometric model considers the impact of share of each functional expenditures in total expenditure by function. *Health*,

education, *ecosv* (economic services) which are shares of health, education, economic services expenditure in GDP are variables presented in model.

Public expenditure on education consists of current and capital public expenditure on education includes government spending on educational institutions (both public and private), education administration as well as subsidies for private entities (students/households and other privates entities).

Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.

Economic services expenditure data is available in ADB website. It consist of four items including expenditure for agriculture; industry; services; electricity, gas and water; transport and communication, other economic services.

Table 10: Statistical analysis of variables for first sample

Variable	Observation	Mean	Standard	Min	Max
Gdpperc	194	5.79	4.41	-13.13	14.47
Taxesper	180	15.47	5.17	2	35.30
Expenper	176	19.55	5.69	3.50	37.75
Loggdpcap	166	7.54	1.34	4.58	10.62
Ecosv	128	0.27	0.17	0.0016	0.81
General	129	0.18	0.26	0.03	1.77
Education	119	0.18	0.08	0.05	0.58
Health	119	0.05	0.03	0.01	0.17
Savingper	161	0.27	0.16	0.00	0.60
Inflation	183	7.87	10.08	-1.71	58.39

Table 10 shows the summary of variables in model for the first sample. The data of variables group includes *gdpperc*, *taxesper*, *expenper*, *loggdpcap*, *savingper*, *inflation* are available for seven countries such as Singapore, Malaysia, Indonesia, Thailand, Philippines, Vietnam and Myanmar.

However, the variables group consists of education, health, defence and ecosv are only presented in Singapore, Malaysia, Indonesia, Thailand, Philippines data base. Thus, we have second sample for five countries group.

Table 10 displays the basic descriptive statistics for the variables used in the estimations. We see that growth rate is about 5.79% per annum. Total government spending amounted to 19.55 % of GDP. Public spending on education and health was about 18% and 5% of total expenditure respectively. Economic services expenditure (ecosv) was the largest component of public spending with about 27%%. Besides these, saving rate (savingper) accounted for only 27% of GDP. The average of inflation rate (inflation) were average of 7.87 % .

Here, we should note that for most variables there is large variation across countries and over time. For example, growth ranges from –13.3% to 14.7%, spending on education was as low as 5% and as high as 58% of total expenditure and health expenditures are between 1% and 17%. Also, economic services range from 0.16% to 81% of total expenditure. Furthermore, taxes on GDP are from 2% to 35.2% and we observe total public expenditure from 3.5 % to 37.75% of GDP.

There are some missing variables, hence the data is unbalance panel data and there are two sample data. Thus, I use an unbalanced panel data set covering ASEAN countries. The number of countries was limited by the requirement of at least 10 observations per country imposed by me, so that we can study long-run growth. The observations are annual, cover the period 1983-2010. In results model, I would show two models of two samples including the first sample for seven countries and the second sample for five countries.

4.3 Results

Firstly, I estimate an endogenous model with public sector for a sample of seven countries. As above, in the first sample we don't have data of government expenditure by function. Hence, in the first model, there is component as follows:

$$Growth = \alpha_1 + \alpha_2 taxesper + \alpha_2 exp enper + \alpha_3 \log gdpcap + \alpha_4 savingper + \alpha_5 inf lation \quad (1)$$

Table 11: the estimation result of model 1

Growth	Coef.	Std. Err.	Z	P>z
--------	-------	-----------	---	-----

Taxesper	0.45	0.11	3.97	0.00
Expenper	-0.33	0.08	-4.05	0.00
Loggdpcap	-0.17	0.33	-0.53	0.60
Savingper	-5.40	2.37	-2.28	0.02
Inflation	-0.33	0.05	-6.80	0.00
_cons	9.67	2.75	3.52	0.00
<hr/>				
Number of obs	=	132		
Number of groups	=	5		
Wald chi2(5)	=	68.80		
Prob > chi2	=	0.0000		

Non-fiscal variable

In neoclassical growth models and recent empirical studies on convergence (see Casseli et al. 1996, Kalaitzidakis et. al, 2001, Doppelhofer et al., 2004), the relationship between growth and GDP per capita is negative implying conditional convergence between the countries of their sample. In this model, the logarithm of GDP per capital has negative sign but it isn't statistically significant.

Neo-classical and Endogenous Growth theories sought to account for the effects of inflation on growth through its impact on investment and capital accumulation.

Endogenous growth theories describe economic growth which is generated by factors within the production process, for example; economies of scale, increasing returns or induced technological change; as opposed to outside (exogenous) factors such as the increases in population. In endogenous growth theory, the growth rate has depended on one variable: the rate of return on capital. Variables like inflation decrease the rate of return, which in turn reduces capital accumulation and decreases the growth rate.

Some versions of the endogenous growth economies find that the inflation rate effects on growth are small. Gomme (1993) found that eliminating a moderate inflation rate (for example, 10 percent) results in only a very small (less than 0.01 percentage point) gain in the growth of output.

Alternative models examine how inflation might directly affect capital accumulation and hence output growth. Haslag (1995) specify economies in which capital and money are complementary goods. In the Haslag studies, the inflation rate effects on growth are substantially greater than those calculated in Gomme.

In the model of this study, inflation has a negative impact on economic growth. This is consistent to the endogenous growth theory. In the ASEAN region, the increase of inflation reduces the economic growth during 1983-2010.

National saving

The relationship between savings and economic growth is not only an important but also a controversial issue for both academics and policy makers. Many internationally reputed economists have analyzed this phenomenon as cause and effect relationship. In the endogenous growth models for example, higher saving rate increases the steady-state growth rate of the economy. Such models will tend to conclude that part of the reason why countries remain poor is because of the low rate of saving in such countries. Greater savings means greater capital accumulation and thus faster output growth.

According to the results of thesis model, national saving to GDP ratio has a negative impact on GDP growth. This isn't consistent to endogenous growth theory.

Total government expenditure and economic growth

In model 1 like in the estimation results of Barro (1991) and other studies, there is a strong negative relation between the public spending share and economic growth in the ASEAN countries. Moreover, the share of public expenditure of ASEAN countries in 1983-2010 is about 20%. It's quite high compared with other regions as well as the world. In fact, the larger government expenditure is, the lower other effective government activities. This leads to reduction the economic growth. From the model result, we can conclude that government expenditure have negative impact on economic growth of ASEAN countries from 1983 to 2010.

Tax revenue and economic growth

As above, in endogenous models classify generally the fiscal policy instruments into: a) distortionary taxation, which weakens the incentives to invest in physical/human capital, hence reducing growth; b) non-distortionary taxation which does not affect the above incentives, therefore growth, due to the nature of the utility function assumed for the private agents.

From the result table 11, it is clear that tax revenue to GDP ratio have impact positive in ASEAN countries in 1983-2010. Thus, the sign of coefficient sound like that of a non-distortionary taxation case.

Model for second sample with additional variables

The second sample with fewer countries makes it possible to estimate an extended model as follows:

$$Growth = \alpha_1 + \alpha_2 taxesper + \alpha_2 exp enper + \alpha_3 \log gdpcap + \alpha_4 savingper + \alpha_5 inf lation + \sum_{j=1}^3 (\beta_j - \beta_k) \Phi_j$$

In data base of ADB, public expenditure by function is classified into 8 components including expenditure on general public services, defense, education, health, social security and welfare, housing and community amenities, economic services, others. However, in my data I divided the data into four components including public expenditure on education, health, economic services and others. Thus, others expenditure here include general public services, defense, social security and welfare, housing and community amenities and others. In this model, Φ_j is share of component j in total public expenditure by function. We have to omit component k in this model to avoid *complete multicollinearity*. I chose k as *others expenditure which includes general public services, defense, social security and welfare, housing and community amenities and others*. Thus, the estimated coefficient of Φ_j is $\beta_j - \beta_k$, but isn't β_j . In other words, coefficient of Φ_j is considered as the impact of movement of government budget from k component to j component on economic growth.

As a result, we have equation following:

$$Growth = \alpha_1 + \alpha_2 taxesper + \alpha_2 exp enper + \alpha_3 \log gdpcap + \alpha_4 savingper + \alpha_5 inf lation + \alpha_6 health + \alpha_7 education + \alpha_8 ecosv$$

Table 12: the estimation results of model 2

Growth	Coefficient	Standard Erro	Z	P>z
Taxesper	0.48	0.13	3.80	0.00
Expenper	-0.35	0.10	-3.62	0.00
Inflation	-0.33	0.05	-6.17	0.00
Loggdpcap	0.62	0.46	1.35	0.18
Savingper	-7.70	3.14	-2.46	0.01
Health	-67.54	26.07	-2.59	0.01
Education	28.67	15.35	1.87	0.06
Ecosv	6.22	3.36	1.85	0.06
_cons	0.74	4.41	0.17	0.87
Number of obs	=	112		
Number of	=	5		

groups		
Wald chi2(8)	=	67.97
Prob > chi2	=	0

In model 2, we have same results with model 1 for common variables such as taxpayer, expenper, inflation, savingper, loggdpcap.

Table 12 shows that the different components of government expenditure have different impact on economic growth. As above, I omitted the other expenditure component. Thus, the increasing of any component leads to decreasing of others expenditure of government. As a result, if the coefficient of Φ_j has positive sign, that means the movement of expenditure from component j to others expenditure have positive impact on economic growth.

I continue the discussion with policies, which affect human capital accumulation, i.e. the quantity and quality of human capital, by noting that government spending on human capital (education expenditure, health expenditure) enhancing activities seems to affect growth in a statistically significant way (table 12).

Health expenditure

Public health expenditure is expected to have positive sign since an increase in public health expenditure is expected to improve the health of the labour force and consequently increase their productivity. An increase labour productivity will inevitably increase gross domestic output. In the result of model, the coefficient of health expenditure variable has negative sign. That means health expenditure has more negative impact on growth than others expenditure. In others words, governmental investment in public health is less effective than others expenditures. In this regard, Summers and Thomas (1993) argue that improvements in people's health and education bring about an increase in the preference for smaller families, which, together with better provision of family planning services, helps to deal with the population problem in many developing countries. An improvement in economic environment can be achieved by reducing heavy subsidies for higher education and increasing primary education spending, from which the returns are relatively higher. The same is expected to happen by switching spending from expensive curative health care systems to primary systems.

Education expenditure

Education expenditure is expected to have positive impact on economic growth. The explanation for this effect may lie in the strong externalities of investment in education in raising the productivity of both human and physical capital.

I find that investment in education is highly significant, its positive effect of this variable on growth is considerable in compare with others expenditure.

Economics services expenditure

In the database of thesis, economics services expenditure include government expenses for industry; agriculture; transport and communication; gas, electricity and water. The results show that economics services expenditure has positive effect on growth in compare with others expenditure. This result is in line with many previous research. Empirical studies analyzing the impact of infrastructure provided by the public sector usually concentrate on roads and motorways, water and sewer systems, dwellings, and sometimes public research and development capital.

4.4 Conclusion and policies recommendation

Conclusion

This study aims to summarize a general relationship between taxation, government expenditure, expenditures by function and economic growth in some selected ASEAN countries in 1983-2010. In chapter 2, I review some issues related to public finance and growth, particularly model of Barro (1991) and Devarajan (1996) which shows relationship between fiscal policy and economic growth in endogenous growth model. In Barro model, government policies may induce positive effects on long-run economic growth. Devarajan investigated the relationship between the composition of public expenditure and economic growth. Using a simple, analytical model, he derived conditions under which a change in the mix of public spending could lead to higher steady-state growth for the economy. The conditions depended not just on the physical productivity of different components of public spending but also on the shares of government expenditure allocated to them. In chapter 3, I reviewed economic performance and fiscal policies in ASEAN countries. The economic growth of ASEAN countries is accelerated during period of 1980-2010. The fiscal policies vary among member of ASEAN. However, the trend of fiscal strength has continued recently in most ASEAN countries. In Chapter 4, I built model to evaluate

the effect of fiscal policy on economic growth in ASEAN countries. The model based on Barro and Devarajan et al. model. The models include fiscal variable and non-fiscal variables. Two model is regressed for two sample. The model 1 examines the relationship between government expenditure, revenue and economic growth. The model 2 investigated additionally the relationship between the composition of public expenditure and economic growth.

The composition of both sides of the government budget, spending and revenues, matters for balanced growth according to endogenous growth models. This study takes into account explicitly both sides of the general government budget using the most recent consistent dataset. I continued past work by providing evidence for endogenous growth model and the impact of fiscal variables on economic growth in case of ASEAN countries. I initially find that tax revenue exert a positive impact on growth in these countries. In contrast, government expenditure has negative impact on economic growth.

On the other hand, the effect of the other categories of government spending on the basis of a functional classification is statistically insignificant. On this basis, it is possible to conclude that government spending composition does matter for growth in the set of ASEAN countries considered here. Government expenditures on human capital enhancing activities (education, health) have a significant positive effect on growth in 1983-2010. I also find here a positive and statistically significant effect of government spending on economics services such as transport and communications, industry, agriculture...

Policies recommendation

Firstly, government expenditure has negative impact on GDP. This implies that these countries should focus on enhance efficiency and effectiveness of public spending. The IMF suggest that these countries should increase efficiency of government projects and also an increase in number private partnership (ppp) project and policies that increase transparency in government decision making and thus increase accountability (see chapter 3).

Secondly, There is a consensus on the positive effect of education, health and infrastructure. Therefore, if government spending on these sectors can contribute to achieve better outcomes on them, a positive effect of those expenditures on growth would be present. From a policy

standpoint, these findings suggest that ASEAN countries should increase government expenditure on education, which can enhance human capital formation, and on economic services including transport and communications, industry, agriculture, gas and water, which is closely associated with expenditure on infrastructure. However, to increase spending on these concepts, governments should also reduce those on other categories given the presence of a budget constraint. In other words, increases of public expenditure on education and transport and communications should be undertaken at the expenses of expenditures on other components of it that are likely not to have any effect on economic activity. A reallocation of government spending like the above-mentioned, giving more importance to more productive sectors is not only critical for boosting growth, but also for achieving more sustained fiscal adjustments

I close with future extensions. I could update our data set including more recent data and more countries, when this is possible. Afterwards, I could further disaggregate government spending in order to explore the growth impact of total government expenditure and each spending category in detail. Finally, we could investigate the role of public sector efficiency and policy volatility in the relation between fiscal policy and growth. I leave these for future research.

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